SECTION 1: Identification

Product identifier
Material Name
Methanol
Synonyms
Methyl alcohol, wood alcohol, methyl hydroxide
Chemical Family
Alcohols
Product Use
Restrictions on Use
None identified
Details of the supplier of the safety data sheet
Methanex Asia Pacific Ltd
Unit 3802, The Lee Gardens,
33 Hysan Avenue, Causeway Bay, Hong Kong
Phone: +852-2918-1398
Fax: +852-2918-1331

Emergency phone number
CHEMTREC Emergency Centre tel.: 65-31581349 (local), 800-101-2201 (toll-free). NCEC: +44 (0) 1235 239 670 (24h/7d)

SECTION 2: Hazards identification

Flammable Liquids - Category 2
Acute Toxicity - Oral - Category 3
Acute Toxicity - Dermal - Category 3
Acute Toxicity - Inhalation - Vapor - Category 3
Serious Eye Damage/Eye Irritation - Category 2
Reproductive Toxicity - Category 1B
Specific Target Organ Toxicity - Single Exposure - Category 1 (optic nerve, central nervous system, retina, systemic toxicity, eyes)
Specific Target Organ Toxicity - Single Exposure - Category 3
Label elements
Hazard symbols
Signal word
Danger

Hazard statements
H225 Highly flammable liquid and vapor.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H331 Toxic if inhaled.
H319 Causes serious eye irritation.
H360 May damage fertility or the unborn child.
H370 Causes damage to organs.
H336 May cause drowsiness or dizziness.

Precautionary statements

Prevention
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P233 Keep container tightly closed.
P210 Keep away from heat/sparks/open flame/hot surfaces - No smoking.
P240 Ground/Bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting equipment.
P243 Take precautionary measures against static discharge.
P242 Use only non-sparking tools.
P271 Use only outdoors or in a well-ventilated area.
P281 Use Personal Protective equipment as required.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

Response
P370+P378 In case of fire: Use appropriate media to extinguish.
P308+P311 If exposed or concerned: Call a POISON CENTER or doctor/physician.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P330 Rinse mouth.
P311 Call a POISON CENTER or doctor.
P321 Specific treatment (see label).
Storage
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P235 Keep cool.
P405 Store locked up.

Disposal
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Statement(s) of Unknown Acute Toxicity
Dermal 0% of the mixture consists of ingredient(s) of unknown acute toxicity.
Oral 0% of the mixture consists of ingredient(s) of unknown acute toxicity.
Inhalation 0% of the mixture consists of ingredient(s) of unknown acute toxicity.

Other Hazards Which Do Not Result in Classification
If swallowed there is a risk of blindness.

SECTION 3: Composition / information on ingredients

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1</td>
<td>Methanol</td>
<td>100</td>
</tr>
</tbody>
</table>

Impurities and stabilizing additives contributing to the GHS Classification
None

SECTION 4: First aid measures

Inhalation
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Administer oxygen if breathing is difficult. Immediately call a POISON CENTER or doctor.

Skin contact
IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Wash with plenty of water. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before reuse.

Eye contact
IF IN EYES: Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation develops and persists, get medical attention.

Ingestion
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

Most Important Symptoms/Effects
Acute
Poison. May be fatal if swallowed. If swallowed there is a risk of blindness. Toxic if swallowed, in contact with skin or if inhaled. Ingestion causes nausea, weakness and central nervous system effects, headache, vomiting, dizziness, symptoms of drunkenness. Coma and death due to respiratory failure may follow severe exposures: Medical treatment necessary. A latent period of several hours may occur between exposure and the onset of symptoms.

Delayed
May damage fertility or the unborn child.

Indication of any immediate medical attention and special treatment needed
Treat symptomatically and supportively. 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. Call a POISON CENTER. Antidote: Fomepizole enhances elimination of metabolic formic acid. Antidote should be administered by qualified medical personnel.

SECTION 5: Firefighting measures

Flammable Properties
Highly flammable liquid and vapor.
Suitable extinguishing media
Carbon dioxide, regular dry powder, water spray, alcohol resistant foam, sand. Use water spray to cool fire fire-exposed containers. Water will not cool methanol below its flash point. Collect spillage.
Unsuitable Extinguishing Media
Do not use high-pressure water streams.
Special Hazards Arising from the Chemical
Highly flammable liquid and vapor. Mixtures >20% methanol with water: flammable. May form explosive mixture with air. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Containers may rupture or explode if exposed to heat. Dangerous gases may accumulate in confined spaces. Toxic.
Hazardous combustion products
Releases toxic gases, vapors. Carbon monoxide, carbon dioxide, formaldehyde.
Fire Fighting Measures
Do not allow run-off from fire-fighting to enter drains or water courses. Keep unnecessary people away, isolate hazard area and deny entry.
Special Protective Equipment and Precautions for Firefighters
Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear appropriate personal protective equipment. Move container from fire area if it can be done without risk. Do not breathe gas/fume/vapour/spray. Avoid contact with eyes and skin.
Environmental precautions
Avoid release to the environment. Biodegradable at low concentrations. Soluble in water. When released, this product is expected to evaporate. Contact authorities in the event of pollution of soil and aquatic environment or discharge into drains. Dispose in accordance with all applicable federal, state/regional and local laws and regulations.
Methods and Materials for Containment and Cleaning Up
Wear suitable protective clothing and eye/face protection. Stop leak if this can be done without risk. Do not touch or walk through spilled material. Evacuate the area promptly and keep upwind of the spilled material. Ensure adequate ventilation. Avoid inhalation of mists or vapors. Avoid contact with eyes, skin and clothing. Remove all sources of ignition. Avoid friction, static electricity and sparks. Small spills: Absorb with sand or other non-combustible material. Use non-sparking tools and equipment. Collect spilled material in appropriate container for disposal. Clean contaminated surface thoroughly. Large spills: Contain the released material by diking the containment area with absorbent. A vapor suppressing foam may be used to reduce vapors. Collect spilled material in appropriate container for reuse or disposal.
SECTION 7: Handling and storage

Precautions for safe handling
Use in a well ventilated area. Wear personal protective clothing and equipment, see Section 8. Eliminate all sources of ignition. No smoking. Do not enter confined spaces unless adequately ventilated. Clean up contamination/spills as soon as they occur. Decontaminate personnel, spill area and all tools and equipment. Use explosion-proof equipment. Use good industrial hygiene practices in handling this material. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and leaving work. Empty containers may contain residual amounts of this product; therefore, empty containers should be handled with care. Do not breathe vapor.

Conditions for safe storage, including any incompatibilities
Store in a well-ventilated place. Keep container tightly closed.
Keep cool.
Store locked up.
Keep/Store only in original container. Keep out of direct sunlight, and away from heat, water, and incompatible materials. Ground/Bond container and receiving equipment. Provide appropriate fire extinguishers and spill cleanup equipment in or near storage area. Store at room temperature. Store in a dry area. Store in fireproof room. Keep unauthorized personnel away.

Incompatible Materials
Lead, Aluminum, zinc, oxidizing agents, strong acids, strong bases, polyethylene, PVC (Polyvinyl chloride), nitrile

SECTION 8: Exposure controls/personal protection

Exposure Guidelines
Component Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>Exposure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
</tr>
<tr>
<td>Singapore:</td>
<td>200 ppm PEL ; 262 mg/m³ PEL</td>
</tr>
<tr>
<td></td>
<td>250 ppm STEL ; 328 mg/m³ STEL</td>
</tr>
<tr>
<td></td>
<td>22875 mg/m³</td>
</tr>
<tr>
<td>ACGIH:</td>
<td>200 ppm TWA</td>
</tr>
<tr>
<td></td>
<td>250 ppm STEL</td>
</tr>
</tbody>
</table>

Biological limit value

| ACGIH: | 15 mg/l Medium: urine Time: end of shift Parameter: Methanol (background, nonspecific) |

Engineering controls
Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits. Use explosion-proof electrical/ventilating/lighting equipment. Handle substance within a closed system. Ground/Bond container and receiving equipment. Maintain eye wash fountain and quick-drench shower in work area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/face protection
Wear splash resistant safety goggles with a faceshield.

Glove Recommendations
Wear appropriate chemical resistant gloves, butyl rubber.

**Respiratory Protection**

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

### SECTION 9: Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>clear</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>alcohol odor</td>
</tr>
<tr>
<td><strong>Odor Threshold</strong></td>
<td>4.2 - 5960 ppm</td>
</tr>
<tr>
<td><strong>Melting Point</strong></td>
<td>-97.8 °C</td>
</tr>
<tr>
<td><strong>Boiling Point Range</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Evaporation Rate</strong></td>
<td>4.1 (butyl acetate = 1)</td>
</tr>
<tr>
<td><strong>Autoignition Temperature</strong></td>
<td>464 °C</td>
</tr>
<tr>
<td><strong>Lower Explosive Limit</strong></td>
<td>5.5 %</td>
</tr>
<tr>
<td><strong>Upper Explosive Limit</strong></td>
<td>36.5 %</td>
</tr>
<tr>
<td><strong>Vapor Density</strong></td>
<td>1.1 (@ 20 °C )</td>
</tr>
<tr>
<td><strong>Water Solubility</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td>0.8 cP (20 °C, dynamic )</td>
</tr>
<tr>
<td><strong>Solubility (Other)</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>VOC</strong></td>
<td>100 %</td>
</tr>
<tr>
<td><strong>Critical Temperature</strong></td>
<td>239.4 °C</td>
</tr>
<tr>
<td><strong>Explosive properties</strong></td>
<td>Vapors may form explosive mixtures with air</td>
</tr>
</tbody>
</table>

**Solvent Miscibility**

**Miscible**

Miscible with water.
SECTION 10: Stability and reactivity

Reactivity
Containers may rupture or explode if exposed to heat.

Chemical stability
Stable under normal conditions of use. In use may form flammable/explosive vapour-air mixture. Product is hygroscopic.

Possibility of hazardous reactions
Will not polymerize.

Conditions to avoid
Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

Materials to Avoid (Incompatibilities)
Lead, Aluminum, zinc, oxidizing agents, strong acids, strong bases, polyethylene, PVC (Polyvinyl chloride), nitrile

Hazardous decomposition products
Heat, carbon monoxide, carbon dioxide, flammable gases, formaldehyde

SECTION 11: Toxicological information

Information on Likely Routes of Exposure

Inhalation:
May cause headache, nausea, dizziness, loss of coordination, central nervous system depression, respiratory tract irritation, sensitivity to light, and/or blurred vision. Coma and death due to respiratory failure may follow severe exposures: Medical treatment necessary. A latent period of several hours may occur between exposure and the onset of symptoms.

Skin contact
Harmful in contact with skin.

Eye contact
Causes serious eye irritation.

Ingestion
Poison. May be fatal if swallowed. If swallowed there is a risk of blindness.

Acute and Chronic Toxicity
Poison. Toxic if swallowed, in contact with skin or if inhaled. If swallowed there is a risk of blindness.

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:

Methanol (67-56-1)
Oral LD50 Rat 5600 mg/kg
Dermal LD50 Rabbit 15800 mg/kg
Inhalation LC50 Rat 64000 ppm 4 h

Acute Toxicity Estimate
No data available.

Immediate Effects
Poison. Toxic if swallowed, in contact with skin or if inhaled. May be fatal if swallowed. If swallowed there is a risk of blindness. Causes serious eye irritation. Causes damage to organs. Ingestion causes nausea, weakness and central nervous system effects, headache, vomiting, dizziness, symptoms of drunkenness, respiratory tract irritation. Coma and death due to respiratory failure may follow severe exposures: Medical treatment necessary. A latent period of several hours may occur between exposure and the onset of symptoms.

Delayed Effects
May damage fertility or the unborn child.
Safety Data Sheet

Material Name: Methanol

Irritation/Corrosivity Data
May cause irritation to eyes, skin and respiratory tract.

Respiratory Sensitization
No data available.

Dermal Sensitization
No data available.

Carcinogenicity
Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA

Mutagenic Data
No data available.

Reproductive Effects Data
No data available.

Specific Target Organ Toxicity - Single Exposure
Optic nerve, central nervous system

Specific Target Organ Toxicity - Repeated Exposure
No target organs identified.

Aspiration hazard
No data available.

Medical Conditions Aggravated by Exposure
Skin disorders, eye disorders, respiratory disorders, kidney disorders, liver disorders

SECTION 12: Ecological information

Ecotoxicity
Avoid release to the environment.

Component Analysis - Aquatic Toxicity

<table>
<thead>
<tr>
<th>Component</th>
<th>LC50 96 h Pimephales promelas</th>
<th>LC50 96 h Oncorhynchus mykiss</th>
<th>LC50 96 h Lepomis macrochirus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish:</td>
<td>&gt;100 mg/L (static)</td>
<td>19500 - 20700 mg/L (flow-through)</td>
<td>13500 - 17600 mg/L (flow-through)</td>
</tr>
<tr>
<td>Algae:</td>
<td>EC50 72 hr Selenastrum capricornutum 22000 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invertebrate:</td>
<td>EC50 48 hr Daphnia &gt;10000 mg/l</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence
Rapidly degradable.

Bioaccumulative potential
Bioconcentration Factor (BCF): < 10

Mobility
Mobile

Other adverse effects
None
SECTION 13: Disposal considerations

Disposal Methods
Dispose in accordance with all applicable federal, state/regional and local laws and regulations.

Component waste information
There is no applicable waste information for this product's components.

Contaminated packaging disposal
Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

IATA Information:
Shipping Name: METHANOL
Hazard Class: 3
UN#: UN1230
Packing Group: II
Required Label(s): 3, 6.1

ICAO Information:
Shipping Name: METHANOL
Hazard Class: 3
UN#: UN1230
Packing Group: II
Required Label(s): 3, 6.1

IMDG Information:
Shipping Name: METHANOL
Hazard Class: 3
UN#: UN1230
Packing Group: II
Required Label(s): 3, 6.1

Component Marine Pollutants (IMDG)
Not a marine pollutant.

International Bulk Chemical Code
This material contains one or more of the following chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>IBC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
</tr>
</tbody>
</table>

Special precautions
None
SECTION 15: Regulatory information

Singapore Regulations
List of Hazardous Substances
No information was found for the substance(s) on the List of Hazardous Substances.

Poisons List
No information was found for the substance(s) on the List of Hazardous Substances.

Hazardous Substance Transport Quantities
None of this product's components are on the list.

Maritime and Port Authority
This product contains no components identified on Singapore's Maritime and Port Authority - Dangerous Goods.

Arms and Explosives Act
None of this product's components are on the list.

Schedule of Chemical Weapons
None of this product's components are on the list.

Misuse of Drugs Act
None of this product's components are on the list.

Petroleum and Flammable Materials

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
</table>
| Methanol | 67-56-1 | Hazard Classes | 3
| Regulated Products | SCDMNL1230L2 |

Strategic Goods Control
This product contains no components identified on Singapore's Strategic Goods Control.

Toxic Industrial Wastes
This product contains no components identified on Singapore's Toxic Industrial Wastes.

Component Analysis - Inventory
Methanol (67-56-1)

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

NFPA Ratings
Health: 1 Fire: 3 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Preparation and Revision Date
Previous Version: 12/5/2013; Updated: 06/26/2017

Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA -
Other Information

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