

GHS SAFETY DATA SHEET

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Effective Date: June 2021
REF NO.:AK21/0130/METHANOL

METHANOL

1. Chemical Product and Company Identification

Product Identification:

Methanol

Chemicals Name:

Methanol

Other Trade Name:

804476, AIKSOLV 103, ALCOHOL METHYL O-M-232, METHANOL, METHANOL (R-2035), METHANOL (R-2035.15), METHYL ALCOHOL, METHYLATED SPIRIT, NALCO® EC6443A (EC6443A.15), PS 2087, RC 3020, SPIRIT

Manufacturer/Supplier:

Aik Moh Paints & Chemicals Pte Ltd
20 TUAS STREET, SINGAPORE 638457
Tel : 6863 1993 Fax : 6863 8033
Website : www.aikmoh.com.sg

2. Hazards Identification

GHS Classification

Flammable liquids	Category 2
Acute toxicity (oral)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Reproductive toxicity	Category 1B
STOT/Systemic toxicity (single exposure) - central nervous system, visual organs and systemic toxicity	Category 1
STOT/Systemic toxicity (single exposure) - anesthetic effects	Category 3
STOT/Systemic toxicity (repeated exposure) - central nervous system and visual organs	Category 1

GHS Label Elements



Signal words: Danger

Physical hazards:

Hazard classification:
H225 - Highly flammable liquid and vapour

Health hazards:

Hazard classification:
H302 - Harmful if swallowed
H315 - Causes skin irritation
H319 - Causes serious eye irritation

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H360 - May damage fertility or the unborn child
H336 - May cause drowsiness or dizziness
H370 - Causes damage to organs
H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary Statement(s):

Prevention

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P242 - Use only non-sparking tools.
P241 - Use explosion-proof electrical/ventilating/lighting/.../equipment.
P243 - Take precautionary measures against static discharge.
P240 - Ground/bond container and receiving equipment.
P233 - Keep container tightly closed.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P264 - Wash thoroughly after handling.

Response

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P332 + P313 - If skin irritation occurs: Get medical advice/attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 - If eye irritation persists: Get medical advice/attention.
P301 + P310 + P330 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
P308 + P313 - IF exposed or concerned: Get medical advice/attention.
P314 - Get medical advice/attention if you feel unwell.
P363 - Wash contaminated clothing before reuse.

Storage

P403 + P233 + P235 - Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal

P501 - Dispose of contents/container to an approved waste disposal plant.

3. Composition Information on Ingredients

Substance vs Mixture	Substance (single-substance product)
Chemical Name	Methanol
Other Name(s)	Methyl alcohol
Chemical Formula	CH ₃ OH
CAS No.	67-56-1
Concentration	99.9 %
Gazette Reference Number	
CSCL	(2)-201
ISHL	(Published)
TSCA Registration	Yes
EINECS Number	200-659-6
DSL/NDL Registration	Yes
AICS Registration	Yes

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ECL Registration Yes
PICCS Registration Yes

4. First-Aid Measures

If Inhaled

Remove victim to fresh air and keep him or her warm and calm. Have him or her rest in a position comfortable for breathing. Get immediate medical advice.

If On Skin

Remove/Take off immediately all contaminated clothing or footwear and thoroughly wash the area of contact with plenty of water and soap. Get medical advice. If skin irritation occurs, get medical advice.

If In Eyes

Rinse the eyes with plenty of water immediately for at least 15 minutes and get medical advice. If able to remove contact lenses easily while rinsing the eyes, do so and continue rinsing. If eye irritation persists, get medical advice/attention.

If Swallowed

Rinse the mouth immediately. Have the individual drink water to induce vomiting and get medical advice. If the victim is unconscious, do not induce vomiting or give anything via the mouth.

If Exposed or Concerned

Get medical advice/attention.

If You Feel Unwell

Get immediate medical advice.

5. Fire Fighting Measures

Extinguishing Media

Water (spray), powder (dry chemical), carbon dioxide gas, dry sand, alcohol-resistant foam (alcofoam).

Unsuitable Extinguishing Media

Use of a concentrated, narrow stream of water may cause fire to spread, posing a hazard.

Specific Fire-Fighting Measures

For a small-scale fire, use water, powder (dry chemical), carbon dioxide gas, dry sand, or another similarly appropriate agent. For a large-scale fire, use alcohol-resistant foam (alcofoam) and water spray. In the event of a nearby fire, immediately move product containers to a safe location. If unable to do so, cool the surrounding area with water.

Special Protective Actions for Fire-Fighting

Always wear protective gear while engaged in firefighting work and work from the upwind side of the fire.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Evacuate people who are downwind of the spill. Prevent people from entering the area of the spill, for example by cordoning it off. When working in the area, be sure to wear appropriate protective gear. Do not work downwind of the spill.

Environmental Precautions

Exercise care so that the spilled product is not discharged into a river or other waterway.

Methods for Containment

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Small Amount : Use a large amount of water to adequately dilute and rinse away the spilled liquid.

Large amount : Stop the spilled liquid from flowing with a material such as dirt or sand and recover as much of the liquid as possible. Use a large amount of water to adequately dilute and rinse away the remaining liquid.

Prevention of Secondary Hazards

Immediate remove any nearby sources of ignition.

7. Handling and Storage

Handling

Technical Measures (Local Exhaust Ventilation/ Full Ventilation System)

When using the product in an indoor work area, seal sources of product vapour or install a local ventilation system. Work to disperse vapour so as to keep concentrations in the work environment as low as possible. Take electrostatic countermeasures and wear conductive work clothes or work boots. Use explosion-proof electrical/venting/lighting/other equipment. Ground/bond container and receiving equipment.

Precautions for Safe Handling (Including Contact Avoidance)

Do not handle until all safety precautions on the Safety Data Sheet (SDS) have been read and understood.

Keep away from flame as the product is readily flammable, and its vapour will mix with air to create an explosive gas. Handle with care as the vapour concentration in the space above an open container at room temperature falls within the explosive range. Keep away from heat/sparks/open flames/ hot surfaces. -- No smoking. Use only non-sparking tools. Avoid mixing with foreign materials (acids, alkalis, heavy metals, organic matter, trash, etc.). Keep container tightly closed. Minimise contact with the eyes and skin by wearing a respirator designed for use with organic solvents, eye protection, protective gloves, protective clothing and face protection. Do not drink the product or inhale its mist or vapour. Use only outdoors or in a well-ventilated area.

Proper Hygiene Measures

Do not eat, drink or smoke when using this product. Change clothes if they become contaminated with the product. Wash the contaminated clothing before reuse. Wash hands/face thoroughly after handling.

Storage

Conditions for Safe Storage

Use only explosion-proof electrical equipment in storage locations, and ground all equipment. Seal product equipment and avoid exposure to direct sunlight. Store the product in a cool, dark, dry, well-ventilated, indoor location that is kept locked. Avoid storing the product in locations with heat sources such as boilers and ensure good ventilation. Do not store in poorly ventilated locations or low-lying locations.

Safe Materials for Containers/Packaging

Use containers prescribed by the local regulation and United Nations transport regulations.

8. Exposure Controls/Personal Protection

Engineering Controls : Install safety equipment such as face and eye showers near locations in which the products will be handled.

Control Limit : 200 ppm

Exposure Limit

Factories Order (PEL) (Singapore, 2/2016)

PEL (short term) : 328 mg/m³ 15 minute(s).

PEL (short term) : 250 ppm 15 minute(s).

PEL (long term) : 262 mg/m³ 8 hour(s).

PEL (long term) : 200 ppm 8 hour(s).

OSHA (2013)

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PEL-TWA 200 ppm (260 mg/m³) (methanol)
Olfactory threshold : 5 ppm

Personal Protective Equipment

Respiratory Protection : Respirator designed for use with organic gases.

Hand Protection : Rubber gloves.

Eye Protection : Protective eyewear (goggles and a face shield)

Skin and Body Protection : Non-permeable work clothing, safety helmet, safety footwear/rubber boots, rubber apron, etc.

9. Physical and Chemical Properties

Appearance	: Colourless, transparent liquid
Odour (Odour Threshold)	: Pungent odour
pH	: Not reported
Melting Point	: -96 °C
Boiling Point	: 64.65 °C (1013hPa)
Flash Point	: 11 °C (closed type)
Ignition Temperature	: 385 °C
Flammability or Explosive Limits	: Explosive range: 6.72 % to 36.5 % by volume (in air), 6.0 % to 36 % by volume
Vapour Pressure	: 8.0 kPa (60 mmHg, 12.1 °C) 12.7 kPa (95 mmHg, 20 °C)
Vapour Density (air=1)	: 1.11
Specific Gravity (Relative Density)	: 0.7928 (d ₄ ²⁰)
Solubility	: Mixes readily with water, ethanol, ether and numerous other organic solvents. Water solubility: 1.00 x 10 ⁶ mg/L
Partition Coefficient: octanol/water (log Kow)	: -0.82/0.66
Decomposition Temperature	: Not reported
Viscosity (Coefficient of viscosity)	: 0.59 x 10 ⁻³ Pa.s (0.59 cm, 20 °C)
Specific Heat	: 2.516 kJ/kg. °C (0.599 kcal/kg. °C)

10. Stability and Reactivity

Reactivity and Stability

The product is stable during normal handling.

Possibility of Hazardous Reactions

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The product reacts violently with oxidants, posing the risk of fire or explosion. When mixed with hydrogen peroxide, mechanical shock may result in an explosion.

Conditions to Avoid

Heating

Incompatible Materials

Oxidants, hydrogen peroxides

Hazardous Decomposition Products

Thermolysis causes release of carbon monoxide and formaldehyde.

Others

Combustibility

Volatile, combustible liquid

Ignitability

None (pyrophoricity, reactivity with water)

Oxidising properties

None

Explosivity

When storing in a sealed container such as a tank, can, or bottle, an explosive mixture will occur inside the container in the temperature range of 11 °C to 42 °C.

11. Toxicological Information

Acute Toxicity

Oral rat LD₅₀ : 5,628 mg/kg

Oral mouse LD₅₀ : 7,300 mg/kg

Dermal rabbit LD₅₀ : The product has been determined to be "not classified" for the purpose of this category based on the value of 15,800 mg/kg.

Inhalation human TCL₀ : 300 ppm

Inhalation rat LC₅₀ : 64,000 ppm/4h

Inhalation rat LC₅₀ : >22,500 ppm (4-hour equivalent value: 31,500 ppm)

Inhalation mouse LC₅₀ : The product has been determined to be "not classified" for the purpose of this type of toxicity characteristic based on the value of 50,000 mg/m³ / 2 h. In some cases, exposure to vapour at a concentration of 50,000 ppm has led to death in 1 to 2 hours.

Skin Corrosion/Irritation

Although irritation of the skin is comparatively minor, repeated exposure to the product in liquid form causes dryness as well as dermatitis with scales and cracking. Based on this fact and the fact that the product is believed to be a moderate skin irritant, it has been classified as Category 2.

Serious Eye Damage/Eye Irritation

In Draize tests using rabbits, the average score (2.1) for conjunctivitis 24, 48 and 72 hours after application was at least 2, and chemosis was observed until 4 hours had elapsed (score: 2.00), although it had improved markedly by 72 hours (score: 0.50) (EHC 196 [1997]). nonetheless, the product has been classified as Category 2 without any subcategory because it is unclear whether the subjects recovered within 7 days.

Respiratory Sensitisation

Not reported.

Skin Sensitisation

The product has been determined to be "not classified" for the purpose of this type of toxicity characteristic based on reports that no sensitivity was observed in Magnusson-Kligman maximisation tests using guinea pigs (EHC 196 [1997]).

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Germ Cell Mutagenicity (Mutagenicity)

The product has been determined to be "not classified" for the purpose of this type of toxicity characteristic based on negative results in micronucleus tests using red blood cells from mice.

Carcinogenicity

No tumours were found 300 days after oral administration by mixing with rat food. No tumours were found in dogs 100 days after exposure to vapour at a concentration of 10,000 ppm for 3 minutes 8 times per day. The product has been determined to be "classification not possible" because it has not been evaluated by the institutions listed in technical guidelines.

Reproductive Toxicity

Although there are published reports of an increase in fetal abnormalities and fetal death during oral and inhaled exposure testing using pregnant rats and mice, the product has been classified as Category 1B based on the absence of reliable data detailing human exposure. Although there are published reports indicating a decrease in testosterone concentration and testicular degeneration in male rats, other reports indicate an absence of any effect on the male reproductive system. As a result, the product's effect on male reproductive capacity remains unclear.

STOT/Systemic Toxicity - Single Exposure

Target organs have been identified as the central nervous system, visual organs and systemic toxicity, and the product has been classified as Category 1 for each based on published reports describing inhibition of the central nervous system and the damage to the visual organs in humans as a result of acute oral and inhaled exposure as well as published reports indicating metabolic acidosis in cases of human exposure.

Due to published reports of anesthesia in clinical information associated with mouse and rat inhaled exposure (EHC 196 [1997], PATY [5th, 2001]) and clinical information associated with acute poisoning of humans indicating anesthetic effects caused by inhibition of the central nervous system (PATY [5th, 2001]), the product has been classified as Category 3 (anesthetic effects).

STOT/Systemic Toxicity - Repeated Exposure

Based on published reports describing inhibition of the central nervous system and damage to visual organs in cases of prolonged human exposure, target organs have been identified as the central nervous system and visual organs, and the product has been classified as Category 1 for each.

Prolonged exposure to vapour at concentrations in excess of 200 ppm causes optic nerve damage and multiple neuritis. Symptoms of optic nerve damage include visual impairment, ocular pain and loss of vision in the central visual field, which may lead to blindness. Symptoms related to the central nervous system include headaches, nausea, dizziness and loss of consciousness. In addition, methanol poisoning causes metabolic acidosis, and acute poisoning causes kidney and liver damage.

Consequently, the product has been classified as Category 1 (central nervous system).

Aspiration Hazard

Classification not possible due to lack of data.

12. Ecological Information

Ecotoxicity

Fish Toxicity

TL₄₈ for trout was determined to be 8,000 mg/L. Death of all Japanese dace at 17,000 mg/L occurred in 24 hours.

Blue gill 96-hour LC₅₀: 15,400 mg/L

Others

Crustaceans (brine shrimp) 24-hour LC₅₀: 900.73 mg/L

Crustaceans (brown shrimp) 96-hour LC₅₀: 1,340 mg/L

Bacteria: Toxicity limit concentration for Pseudomonas: 6,600 mg/L

Algae toxicity: 530 mg/L; green algae toxicity: 8,000 mg/L

Persistence/Degradability

Good degradability

BOD 5 days : 53.4 % decomposition

BOD 10 days : 62.7 % decomposition

BOD 20 days : 67 % decomposition

BOD 50 days : 97.7 % decomposition

BOD 14 days : 92 % decomposition

TOC 14 days : 99 % decomposition

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GC 14 days : 100 % decomposition

Bioaccumulative Potential

Not reported.

Mobility in Soil

Not reported.

Adverse Effects on Ozone Layer

Not reported (not listed in the Monreal Protocol handbook)

13. Disposal Considerations

Disposal of contents/container in accordance with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Waste Residues

Incineration method : Absorb with a material such as diatomaceous earth and burn in an open-type incinerator. Alternatively, burn by spraying into the firebox of an incinerator. If not incinerating, contract a specialised operator to dispose of the product as industrial waste.

Contaminated Containers and Packaging

Dispose of residue, remove any foreign matter by washing with water and dispose. Treat wastewater from washing as residue waste.

14. Transport Information

LAND

UN Class

: Class: 3 (flammable liquid)
Secondary hazard class: 6.1 (toxic substance)

UN Number

: 1230

Product Name

: Methanol

Hazchem Code

: 3YE

Packing Group

: II

Environmental Hazards

: No

SEA (IMDG)

UN Class

: Class: 3 (flammable liquid)
Secondary hazard class: 6.1 (toxic substance)

UN Number

: 1230

Product Name

: Methanol

Hazchem Code

: 3YE

Packing Group

: II

Environmental Hazards

: No

Emergency Schedule (EmS)

: F-E, S-D

Marine Pollutant

: N/A

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AIR (IATA)

UN Class	: Class: 3 (flammable liquid) Secondary hazard class: 6.1 (toxic substance)
UN Number	: 1230
Product Name	: Methanol
Hazchem Code	: 3YE
Packing Group	: II
Environmental Hazards	: No
Emergency Schedule (EmS)	: F-E, S-D
Passenger and Cargo	
Aircraft	Quantity limitation : 1L Packaging instructions : 305
Cargo Aircraft Only	Quantity limitation : 60L Packaging instructions : 307
Limited Quantities Passenger	Quantity limitation : 1L Packaging instructions : Y305

15. Regulatory Information

Labelling According to EC Directives

EC Label
Hazard symbols
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) :

S7 Keep container tightly closed.
S16 Keep away from sources of ignition - No smoking.
S36/37 Wear suitable protective clothing and gloves.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

16. Other Information

Disclaimer

This information is based on our current knowledge and is intended to describe the product for the only. It should not therefore be construed as guaranteeing any specific property of the product.