SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of: Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations

Issuing Date 23-Nov-2022 **Revision Date** 23-Nov-2022 **Revision Number** 1

Section 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product Name Methanol

CAS No 67-56-1

Other means of identification

Synonyms Methyl alcohol, wood alcohol, methyl hydroxide

Molecular weight 32.04

Other information Chemical Family - Alcohols

Recommended use of the chemical and restrictions on use

Recommended use Industrial use, Professional use, Consumer use:

Solvent
Fuels
Raw material
Cleaning agent
Laboratory reagent
Use in oil and gas field drilling and production operations
Water treatment chemicals, wastewater
Consumer use of cleaning agents and de-icers

Uses advised against None known

Supplier's details

Supplier
Methanex Methanol Company
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Plano, TX 75024
USA
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Fax: +1 972 233 1266

Atlas Methanol Company UnlimitedPoint Lisas Industrial Estate
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Republic of Trinidad and Tobago
Tel: +1 868 679 4400
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For further information, please contact

Emergency telephone number

Emergency telephone NCEC Carechem 24 service
Malaysia Republic +60 3 6207 4347

SECTION 2: Hazard identification

Classification of the substance or mixture

Flammable liquids	Category 2
Acute toxicity - Oral	Category 3
Acute toxicity - Dermal	Category 3
Acute toxicity - Inhalation (Vapours)	Category 3
Specific target organ toxicity — single exposure	Category 1

Label elements

Signal word
Danger

Hazard statements
Highly flammable liquid and vapour.
Toxic if swallowed, in contact with skin or if inhaled.
Causes damage to organs.

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/clothing and eye/face protection. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume/gas/mist/vapours/spray. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use only non-sparking tools. Take action to prevent static discharges. Use explosion-proof electrical/ ventilating/ lighting/ equipment. Keep cool.

Precautionary Statements - Response
Specific treatment (see supplemental first aid instructions on this label). IF exposed: Call a POISON CENTER or doctor.

Skin
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a POISON CENTER or doctor/physician if you feel unwell. Wash contaminated clothing before reuse.

Inhalation
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician.

Ingestion
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.

Fire
In case of fire: Use CO2, dry chemical, or foam for extinction.

Precautionary Statements - Storage
Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Precautionary Statements - Disposal
Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable.

Other hazards which do not result in classification
Risk of blindness after swallowing the product. Harmful to aquatic life.

Section 3: Composition/information on ingredients

Substance

Chemical name	CAS No	Weight-%
Methanol	67-56-1	100

SECTION 4: First aid measures

Description of necessary measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation Remove to fresh air. IF exposed or concerned: Get medical advice/attention. If breathing has stopped, give artificial respiration. Get medical attention immediately. Immediate medical attention is required. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen.

Skin contact Remove/Take off immediately all contaminated clothing. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical attention.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Get immediate medical attention.

Ingestion Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical attention.

Specific first aid facilities Facilities for quickly drenching the body should be provided within the immediate work area for emergency use where there is a possibility of exposure.

Self-protection of the first aider Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Do not breathe vapour or mist.

Most important symptoms and effects, both acute and delayed

Symptoms Exposure may cause 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. May cause blindness.

Indication of immediate medical attention and special treatment needed, if necessary

Note to doctors 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

Suitable (and unsuitable) extinguishing media

Suitable Extinguishing Media Use water spray to cool fire-exposed containers. Water will not cool methanol below its flash point. Dry chemical. Carbon dioxide (CO2). Water spray. Alcohol resistant foam. Dry

sand.

Unsuitable extinguishing media Do not use straight streams. Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the chemical Mixtures >20% methanol with water: flammable. Highly flammable liquid and vapour. Vapours are heavier than air and may spread along floors. Risk of ignition. Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Methanol: Burns with invisible flame. Flame may not be visible in daylight. Cool containers with flooding quantities of water until well after fire is out.

Hazardous combustion products Toxic gases or vapours. Carbon monoxide. Carbon dioxide (CO2). Formaldehyde.

Special protective equipment and precautions for fire-fighters

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Do not breathe vapour or mist.

Other information Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Avoid release to the environment. Dispose of contents/containers in accordance with local regulations. 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. Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapour suppressing foam may be used to reduce vapours. Dyke far ahead of spill to collect run-off water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up Take precautionary measures against static discharges. Dyke far ahead of liquid spill for later disposal. Soak up with inert absorbent material. Pick up and transfer to properly labelled containers. Small spill: Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use non-sparking tools. Collect spillage. Place in appropriate chemical waste container. Clean contaminated surface thoroughly. Large spill: Dyke far ahead of spill; use dry sand to contain the flow of material. Use clean non-sparking tools to collect absorbed material.

Precautions to prevent secondary hazards

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections Safe handling: see Section 7. Personal protection equipment (PPE): see Section 8. Disposal: see Section 13.

SECTION 7: Handling and storage

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Do not enter confined area unless adequately ventilated. Use personal protection equipment. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Use according to package label instructions. Avoid contact with skin, eyes or clothing. Take off contaminated clothing and wash it before reuse. Do not breathe vapour or mist. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Do not breathe vapour or mist.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep unauthorised personnel away. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labelled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Keep out of the reach of children. Store locked up.

Incompatible materials Lead. Aluminium. Zinc. Oxidising agent. Strong acids. Strong bases. Polyethylene. Polyvinyl chloride (PVC). Nitriles.

Section 8: Exposure controls and personal protection

Control parameters

Exposure Limits

Chemical name	Malaysia	ACGIH TLV
Methanol 67-56-1	TWA: 200 ppm TWA: 262 mg/m^3 Skin*	STEL: 250 ppm TWA: 200 ppm S*

Biological occupational exposure limits

Chemical name	ACGIH
Methanol - 67-56-1	15 mg/L - urine (Methanol) - end of shift

Appropriate engineering controls

Engineering controls Provide local exhaust ventilation. Handle product only in closed system or provide appropriate exhaust ventilation. Use explosion-proof ventilating equipment. All equipment used when handling the product must be grounded. Ensure that eyewash stations and

safety showers are close to the workstation location.

Individual protection measures, such as personal protective equipment

Eye/face protection Tight sealing safety goggles.

Hand protection Wear suitable gloves. Impervious gloves. Butyl rubber.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Antistatic boots.

Respiratory protection Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode. Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. 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

Environmental exposure controls Avoid release to the environment. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Clear liquid
Physical state	Liquid
Colour	Clear
Odour	Alcohol
Odour threshold	4.2 - 5960 ppm

Values		**Remarks • Method**
pH		No data available
Melting point / freezing point	-97.8 °C	No data available
Initial boiling point and boiling range	64.7 °C	No data available
Flash point	11 °C	No data available
Evaporation rate	4.1	Butyl acetate = 1
Flammability		No data available
Upper/lower flammability or explosive limits		
Upper flammability or explosive limits	36.5%	No data available
Lower flammability or explosive limits	5.5%	No data available
Vapour pressure	12.8 kPa	@ 20 °C
Vapour density	1.1	@ 20 °C (air = 1)
Relative density	0.791 - 0.793	@20°C
Water solubility	Miscible in water	No data available
Solubility(ies)		No data available
Partition coefficient	-0.77	log Pow
Autoignition temperature	464 °C	No data available
Decomposition temperature		No data available
Kinematic viscosity		No data available
Dynamic viscosity	0.8 cP	@ 20 °C

Other information

Explosive properties	Vapours may form explosive mixtures with air.
Oxidising properties	No information available.
Molecular weight	32.04
VOC content	100%

SECTION 10: Stability and reactivity

Reactivity

Reactivity Containers may rupture or explode if exposed to heat.

Chemical stability

Stability Stable under normal conditions. May form flammable/explosive vapour-air mixture. Hygroscopic.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge Yes.

Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

Conditions to avoid

Conditions to avoid Heat, flames and sparks. Excessive heat. Containers may rupture or explode if exposed to heat.

Incompatible materials

Incompatible materials Lead. Aluminium. Zinc. Oxidising agent. Strong acids. Strong bases. Polyethylene. Polyvinyl chloride (PVC). Nitriles.

Hazardous decomposition products

Hazardous decomposition products Carbon monoxide. Carbon dioxide (CO2). Formaldehyde.

SECTION 11: Toxicological information

Information on the likely routes of exposure

Product Information

Inhalation Toxic by inhalation.

Ingestion Toxic if swallowed. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED.

Skin contact Toxic in contact with skin.

Eye contact May cause irritation.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms 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. May cause blindness.

Acute toxicity

Numerical measures of toxicity
Acute Toxicity Estimate (ATE) values provided as a reflection of the hazard classification

The following values are calculated based on chapter 3.1 of the GHS document:
ATEmix (oral) 100 mg/kg

ATEmix (dermal) 300 mg/kg
ATEmix (inhalation-vapour) 3 mg/l

Chronic (long-term) toxicity No information available.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Methanol	= 6200 mg/kg (Rat)	= 15840 mg/kg (Rabbit)	= 22500 ppm (Rat) 8 h = 64000 ppm (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation May cause skin irritation. Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation May cause mild to moderate irritation.

Respiratory or skin sensitisation No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Contains no ingredient listed as a carcinogen.

Reproductive toxicity No information available.

STOT - single exposure Causes damage to organs.

STOT - repeated exposure No information available.

Target organ effects Central nervous system. Optic nerve.

Aspiration hazard No information available.

SECTION 12: Ecological information

Ecotoxicity

Ecotoxicity Avoid release to the environment.

Chemical name	Algae/aquatic plants	Fish	Crustacea
Methanol	-	LC50: =28200mg/L (96h, Pimephales promelas) LC50: >100mg/L (96h, Pimephales promelas) LC50: 19500 - 20700mg/L (96h, Oncorhynchus mykiss) LC50: 18 - 20mL/L (96h, Oncorhynchus mykiss) LC50: 13500 - 17600mg/L (96h, Lepomis macrochirus)	-

Persistence and degradability

Persistence and degradability Readily biodegradable.

Bioaccumulative potential

Bioaccumulation Not expected to bioaccumulate.

Bioconcentration factor (BCF) <10

Component Information

Chemical name	Partition coefficient
Methanol	-0.77

Mobility

Mobility in soil Adsorbs on soil.

PBT and vPvB assessment

Chemical name	PBT and vPvB assessment
Methanol	The substance is not PBT / vPvB. PBT assessment does not apply. Further information relevant for the PBT assessment is necessary.

Other adverse effects

Other adverse effects No information available.

SECTION 13: Disposal information

Disposal methods

Waste from residues/unused products Do not allow into any sewer, on the ground or into any body of water. Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Recover or recycle if possible. Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

SECTION 14: Transportation information

IMDG

UN number	UN1230
UN proper shipping name	METHANOL
Transport hazard class(es)	3
Subsidiary hazard class	6.1
Packing group	II
Description	UN1230, METHANOL, 3 (6.1), II, (11°C C.C.)
Marine pollutant	NP
Special Provisions	279
EmS-No	F-E, S-D
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	No information available

RID

UN number	UN1230
UN proper shipping name	METHANOL
Transport hazard class(es)	3
Subsidiary hazard class	6.1
Packing group	II
Description	UN1230, METHANOL, 3 (6.1), II
Environmental hazards	Not applicable
Special Provisions	None
Classification code	FT1

ADR

UN number	UN1230
UN proper shipping name	METHANOL
Transport hazard class(es)	3
Subsidiary class	6.1
Packing group	II
Description	UN1230, METHANOL, 3 (6.1), II
Environmental hazards	Not applicable
Special Provisions	279
Classification code	FT1
Tunnel restriction code	(D/E)

IATA

UN number	UN1230
UN proper shipping name	Methanol
Transport hazard class(es)	3
Subsidiary hazard class	6.1
Packing group	II
Description	UN1230, Methanol, 3 (6.1), II
Environmental hazards	Not applicable
Special Provisions	A113
ERG Code	3L

Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises

Special precautions for user Please refer to the applicable dangerous goods regulations for additional information

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

National regulations

Malaysia - Applicable regulations:

OSHA (Occupational Safety and Health Act) 1994 and relevant regulations

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations
Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations
See section 8 for national exposure control parameters.

Hazardous chemical	Threshold quantity (T)
Flammable	200 Process conditions: elevated temperature

Factories and Machinery Act 1967 and relevant regulations

Not applicable

Environmental Quality Act 1974 and regulations Not applicable

Road Transport (Construction and Use) (Dangerous Goods Vehicle) Rules 2015

Not applicable

International Inventories

TSCA	Listed.
DSL/NDSL	Listed.
EINECS/ELINCS	Listed.
ENCS	Listed.
IECSC	Listed.
KECL	Listed.
PICCS	Listed.
AICS	Listed.

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

SECTION 16: Other information

Date of preparation of the SDS 23-Nov-2022

Date of revision of the SDS 23-Nov-2022

Revision Note Initial Release.

Key or legend to abbreviations and acronyms used in the safety data sheet
X - Listed

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Key literature references and sources for data used to compile the SDS
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
Organisation for Economic Co-operation and Development Screening Information Data Set
World Health Organization

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End of Safety Data Sheet