



SAFETY DATA SHEET

This safety data sheet complies with the requirements of:
Taiwan CNS 15030

Issuing Date 15-Jun-2021

Revision Date 15-Mar-2024

Product Name Methanol
Revision Number 2

1. Identification

Product identifier

Product Name Methanol
Chemical name Methanol
English chemical name Methanol

Other names

Synonyms Methyl alcohol, wood alcohol, methyl hydroxide
UN/ID no UN1230
CAS No 67-56-1
Pure substance/mixture Substance
Molecular weight 32.04

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
Consumer use of cleaning agents and de-icers

Uses advised against None

Manufacturer, importer or supplier name, address and telephone number

Supplier

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Emergency telephone number

Emergency telephone NCEC: +886 2 8793 3212 (24 hours/day)

2. Hazard(s) identification**Chemical hazard classification**

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

Label elements**Signal word**

Danger

Hazard statements

Highly flammable liquid and vapor
 Toxic if swallowed, in contact with skin or if inhaled
 Causes damage to organs
 Harmful to aquatic life

Precautionary statements**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/vapors/spray
 Avoid release to the environment
 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
 Keep container tightly closed
 Use explosion-proof electrical/ ventilating/ lighting/ equipment
 Ground and bond container and receiving equipment
 Use only non-sparking tools
 Take action to prevent static discharges
 Keep cool

Precautionary Statements - Response

Specific treatment (see supplemental first aid instructions on this label)
 IF INHALED: Remove person to fresh air and keep comfortable for breathing
 Call a POISON CENTER or doctor
 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
 Call a POISON CENTER or doctor if you feel unwell
 IF SWALLOWED: Immediately call a POISON CENTER or doctor

Rinse mouth

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

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

Poison. Risk of blindness after swallowing the product.

3. Composition/information on ingredients**Substance**

CAS No 67-56-1

English chemical name Methanol

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

4. First-aid measures**Different exposure routes and first aid procedures**

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	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. Remove contact lenses, if present and easy to do. Continue rinsing.
Ingestion	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical attention.
<u>Most important symptoms and effects</u>	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.
<u>Effects of Exposure</u>	Causes damage to organs: Eyes.
<u>Self-protection of the first aider</u>	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. Avoid contact with skin, eyes or clothing. 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 vapor or mist.

Note to physicians

Poison. May be fatal if swallowed. 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.

5. Fire-fighting measures**Suitable 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.

Unsuitable extinguishing media

Do not use straight streams. Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Highly flammable liquid and vapor. Vapors are heavier than air and may spread along floors. Mixtures >20% methanol with water: flammable. 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.

Hazardous combustion products

Toxic gases or vapors, Carbon monoxide, Carbon dioxide (CO₂), Formaldehyde.

Specific/special fire-fighting measures

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. Fires need to be assessed to determine appropriate protocols and safety measures for firefighting, including establishing safe zones, extinguishing media to be used, firefighter protection, and actions to control or extinguish the fire.

Special protective equipment for fire-fighters

Fires need to be assessed to determine appropriate protocols and safety measures for firefighting, including establishing safe zones, extinguishing media to be used, firefighter protection, and actions to control or extinguish the fire. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental release measures**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 vapor 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

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 for cleaning up

Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapor

suppressing foam may be used to reduce vapors. Dike far ahead of spill to collect runoff 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. Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

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

7. Handling and storage

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. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Do not breathe vapor or mist. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation.

Storage

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 labeled 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, Aluminum, Zinc, Oxidizing agent, Strong acids, Strong bases, Polyethylene, Polyvinyl chloride (PVC), Nitriles.

8. Exposure controls/personal protection

Engineering controls

Provide local exhaust ventilation. Handle product only in closed system or provide appropriate exhaust ventilation. All equipment used when handling the product must be grounded.

Control parameters

Occupational exposure limits

Chemical name	Taiwan	ACGIH TLV
Methanol 67-56-1	TWA: 200 ppm TWA: 262 mg/m ³ STEL: 250 ppm STEL: 327.5 mg/m ³ Sk*	TWA: 200 ppm STEL: 250 ppm Sk*

Biological limit value

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

Personal protective equipment

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.

Eye/face protection	Tight sealing safety goggles.
Hand protection	Wear suitable gloves. Impervious gloves.
Skin and body protection	Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Antistatic boots.
Hygiene Measures	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 vapor or mist.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Clear liquid	Odor	Alcohol
Physical state	Liquid	Odor threshold	4.2 -5960 ppm
Color	Clear		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH		No data available
Melting point / freezing point	-97.78 °C / -144 °F	No data available
Initial boiling point and boiling range	64.72 °C / 148.5 °F	No data available
Flash point	11 °C / 51.8 °F	No data available
Evaporation rate	4.1	Butyl acetate = 1
Flammability		No data available
Explosive limits		
Upper flammability or explosive limits	36.5%	No data available
Lower flammability or explosive limits	5.5%	No data available
Vapor pressure	12.8 kPa	@ 20 °C
Vapor 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 n-octanol /water (log KOW)	-0.77	log Pow
Autoignition temperature	464 °C / 867.2	No data available
Decomposition temperature		No data available
Kinematic viscosity		No data available
Dynamic viscosity	0.8 cP	@ 20 °C
Explosive properties	Vapors may form explosive mixtures with air	
Oxidizing properties	None known	

Other information

Molecular weight	32.04
VOC content	100%
Bulk density	No information available

10. Stability and reactivity

<u>Stability</u>	Stable under normal conditions. May form flammable/explosive vapor-air mixture. Hygroscopic.
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<u>Reactivity</u>	Containers may rupture or explode if exposed to heat.
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Sensitivity to mechanical impact	None.
Sensitivity to static discharge	Yes.
<u>Possibility of hazardous reactions</u>	None under normal processing.
Hazardous polymerization	Hazardous polymerization does not occur.
<u>Conditions to avoid</u>	Protect from direct sunlight. Containers may rupture or explode if exposed to heat. Heat, flames and sparks. Excessive heat.
<u>Incompatible materials</u>	Lead, Aluminum, Zinc, Oxidizing agent, Strong acids, Strong bases, Polyethylene, Polyvinyl chloride (PVC), Nitriles.
<u>Hazardous decomposition products</u>	Carbon monoxide, Carbon dioxide (CO2), Formaldehyde.

11. Toxicological information

Information on likely routes of exposure

Product Information

Inhalation	Toxic by inhalation.
Eye contact	May cause irritation.
Skin contact	Toxic in contact with skin.
Ingestion	Poison. Toxic if swallowed. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED.

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 Toxic if swallowed. Toxic in contact with skin. Toxic by inhalation.

Numerical measures of toxicity - Product Information

Acute Toxicity Estimate (ATE) values provided as a reflection of the hazard classification. The acute toxicity of methanol varies greatly species to species and has been well documented. Methanol's toxicity is driven by its metabolism and the creation of toxic metabolites. Metabolism within animal species utilized for acute toxicity testing is not an accurate representation of human metabolism. Therefore, positive human evidence outweighs rat and rabbit toxicity values. Animal toxicity values are reported below, but are not appropriate for human health 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-vapor)	3 mg/l

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

Chronic (long-term) toxicity

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation	No information available.
Respiratory or skin sensitization	No information available.
Germ cell mutagenicity	No information available.
Carcinogenicity	EU CLP: Category 2 (Applies to CLP according to Article 5 of Notification 2018-24). Based on available data, the classification criteria are not met.
Reproductive toxicity	No information available.
STOT - single exposure	Causes damage to organs.
STOT - repeated exposure	No information available.
Target organ effects	Eyes: Optic nerve.
Aspiration hazard	No information available.

12. Ecological information

Ecotoxicity Avoid release to the environment. Harmful to aquatic life.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	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 Readily biodegradable.

Bioaccumulation BCF <10.

Component Information

Chemical name	Partition coefficient
Methanol	-0.77

Mobility in soil Adsorbs on soil.

Other adverse effects No information available.

13. Disposal considerations

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

14. Transport information

IMDG

UN number or ID number	UN1230
UN proper shipping name	METHANOL
Transport hazard class(es)	3
Subsidiary hazard class	6.1
Packing group	II
Marine pollutant	NP
Description	UN1230, METHANOL, 3 (6.1), II, (11°C C.C.)
Special Provisions	279
EmS-No.	F-E, S-D

IATA

UN number or ID 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
Special Provisions	A113
ERG Code	3L

Special shipping methods and precautions

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

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations

See section 8 for national exposure control parameters

Applicable regulations:

Rules on the prevention of organic solvent poisoning

Class 2 organic solvents

Road traffic safety rules

If this product is a waste then it is also subject to the Road traffic safety rules

Regulations governing the safe transport of dangerous goods by air

This product is subject to the regulations governing the safe transport of dangerous goods by air

Rules on the safe carriage of dangerous goods by ship

This product is subject to rules on the safe carriage of dangerous goods by ship

Rules on transport by rail

This product is subject to Rules on transport by rail

International Inventories

Contact supplier for inventory compliance status

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

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

16. Other information**SDS authoring company**

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Authoring date 15-Jun-2021	Revision Date 15-Mar-2024	

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

Legend

SVHC: Substances of Very High Concern for Authorization:
PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances
vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances
STOT: Specific Target Organ Toxicity
ATE: Acute Toxicity Estimate
LC50: 50% Lethal Concentration
LD50: 50% Lethal Dose

Legend Section 8: Exposure controls/personal protection

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

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
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)
National Institute of Technology and Evaluation (NITE)
Australia 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 Library of Medicine's PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
World Health Organization

Revision Note

Company contact information. Updated format.

Disclaimer

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End of Safety Data Sheet