

SAFETY DATA SHEET

This safety data sheet complies with the requirements of: Regulation of Labeling and Hazard Communication of Hazardous Chemicals

Revision date 29-May-2025 Product Name Methanol Revision Number 2.1

1. Identification

Issuing Date 15-Jun-2021

Product identifier

Product Name Methanol

Chemical name Methanol

English chemical name Methanol

Other names

Synonyms Methyl alcohol, wood alcohol, methyl hydroxide

UN number or ID number 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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E-mail address wliu@methanex.com

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
Hazardous to the aquatic environment - acute	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, protective clothing, eye protection and face protection

Use only outdoors or in a well-ventilated area

Do not breathe dust

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

<u>Substance</u>

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.

Most important symptoms and

effects

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.

Effects of Exposure 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	TWA: 200 ppm;	TWA: 200 ppm
67-56-1	TWA: 262 mg/m ³ ; STEL: 250 ppm; STEL: 327.5 mg/m ³ ; Sk	STEL: 250 ppm pSk

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.

Do not eat, drink or smoke when using this product. Contaminated work clothing should not Hygiene Measures

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.

log Pow

No data available

No data available

Do not breathe vapor or mist.

9. Physical and chemical properties

Appearance Clear liquid Physical state Liquid Odor Alcohol

Color Clear **Odor threshold** 4.2 -5960 ppm

Property Values Remarks • Method pH value No data available

Melting point -97.78 °C / -144 °F No data available 64.72 °C / 148.5 No data available Boiling point / boiling range Flash point 11 °C / 51.8 °F No data available **Evaporation rate** 4.1 Butvl acetate = 1

Flammability (solid, gas) No data available

Explosive limits

Upper explosion limit 36.5% No data available Lower explosion limit No data available 5.5% Vapor pressure 12.8 kPa @ 20 °C

@ 20 °C (air = 1) Vapor density 1.1 **Density** 0.791 - 0.793 @20°C

Water solubility Miscible in water No data available No data available

Solubility

Partition coefficient n-octanol /water (log KOW) -0.77

Autoignition temperature 464 °C / 867.2

Decomposition temperature

SADT (°C) No data available Kinematic viscosity No data available @ 20 °C

Dynamic viscosity 0.8 cP

Other information

Molecular weight 32.04 **VOC** content 100%

Softening point No information available

Information with regard to physical hazard classes

Explosive properties Vapors may form explosive mixtures with air

Oxidizing properties None known

10. Stability and reactivity

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

Hygroscopic.

Reactivity Containers may rupture or explode if exposed to heat. Sensitivity to mechanical impact None.

Sensitivity to static discharge Yes.

Possibility of hazardous reactions 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.

Incompatible materials Lead, Aluminum, Zinc, Oxidizing agent, Strong acids, Strong bases, Polyethylene, Polyvinyl

chloride (PVC), Nitriles.

Hazardous decomposition products 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 ATE values have been calculated for the mixture

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/irritationNo 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 exposureNo information available.

Target organ effects Eyes: Optic nerve. Central nervous system.

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	Crustacea
			microorganisms	
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)		

<u>Persistence and degradability</u> Readily biodegradable.

<u>Bioaccumulation</u> BCF <10.

Component Information

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 || Marine pollutant indicator NP

Special Provisions 279 F-E S-D

Description UN1230, METHANOL, 3 (6.1), II, (11°C C.C.)

Transport in bulk according to IBC Code: Category Y

Annex II of MARPOL 73/78 and

the IBC Code

<u>IATA</u>

UN number or ID number UN1230 UN proper shipping name Methanol Transport hazard class(es) 3

Subsidiary hazard class (es) 3

Packing group II

Environmental hazards No

Special Provisions A113

ERG Code 3L

Description UN1230, Methanol, 3 (6.1), II

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 29-May-2025	

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

Legend	
ACGIH	American Conference of Governmental Industrial Hygienists
ADN	Agreement concerning the International Carriage of Dangerous Goods by Inland
	Waterways (Europe)
ADR	Agreement concerning the International Carriage of Dangerous Goods by Road (Europe)
AIIC	Australian Inventory of Industrial Chemicals
ATE	Acute Toxicity Estimate
ASTM	American Society for the Testing of Materials
bar	Biological Reference Values for Chemical Compounds in the Work Area
BAT	Biological tolerance values for occupational exposure
BEL	Biological exposure limits
bw	Body weight
Ceiling	Maximum limit value
CMR	Carcinogen, Mutagen or Reproductive Toxicant
DOT	Department of Transportation (United States)
DSL	Domestic Substances List (Canada)
EmS	Emergency Schedule
ENCS	Existing and New Chemical Substances (Japan)
EPA	U.S. Environmental Protection Agency
GHS	Globally Harmonized System
IARC	
	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships carrying Dangerous
1010	Chemicals in Bulk
ICAO	International Civil Aviation Organization
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
KECI	Korean Existing Chemicals Inventory
LC50	Lethal Concentration to 50% of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
MARPOL	International Convention for the Prevention of Pollution from Ships
n.o.s.	Not Otherwise Specified
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOELR	No Observable Effect Loading Rate
NZIoC	New Zealand Inventory of Chemicals
OECD	Organization for Economic Cooperation and Development
OEL	Occupational exposure limits
PBT	Persistent, Bioaccumulative and Toxic substance
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PMT	Persistent, Mobile and Toxic
PPE	Personal protective equipment
QSAR	Quantitative Structure Activity Relationship
RID	Agreement concerning the International Carriage of Dangerous Goods by Rail (Europe)
SADT	Self-Accelerating Decomposition Temperature
SAR	• 1
	Structure-activity relationship
SDS	Safety Data Sheet
SL	Surface Limit
STEL	Short Term Exposure Limit
STOT RE	Specific target organ toxicity - Repeated exposure
STOT SE	Specific target organ toxicity - Single exposure
TCSI	Taiwan Chemical Substance Inventory

TDG	Transport of Dangerous Goods (Canada)
TSCA	Toxic Substances Control Act (United States)
TWA	Time-Weighted Average
UN	United Nations
VOC	Volatile organic compounds
vPvB	Very Persistent and Very Bioaccumulative
vPvM	Very Persistent and Very Mobile
As	Allergenic substance
DS	Dermal Sensitizer
Ot	Ototoxicant
pOt	Ototoxicant - potential to cause hearing disorders
PS	Photosensitizer
RS	Respiratory Sensitizer
S	Sensitizer
poS	Sensitizer - capable of causing occupational asthma
Sa	Simple asphyxiant
Sd	Skin designation
pSd	Skin designation - potential for cutaneous absorption
Sdv	Skin designation - vacated
Sk	Skin notation
dSk	Skin notation - danger of cutaneous absorption
pSk	Skin notation - potential for cutaneous absorption

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

- U.S. Agency for Toxic Substances and Disease Registry (ATSDR)
- U.S. Environmental Protection Agency ChemView Database

European Food Safety Authority (EFSA)

U.S. 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 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)

International Organization for Economic Co-operation and Development (OECD) Environment, Health, and Safety Publications International Organization for Economic Co-operation and Development (OECD) High Production Volume Chemicals Program International Organization for Economic Co-operation and Development (OECD) Screening Information Data Set United Nations World Health Organization (WHO)

Revision Note

Company contact information. Updated format.

Disclaimer

The information above is believed to be accurate and represents the best information currently available to us. Users should make their own investigations to determine the suitability of the information for their particular purposes. This document is intended as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Methanex Corporation and its subsidiaries make no representations or warranties, either express or implied, including without limitation any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers. Accordingly, Methanex Corp. will not be responsible for damages resulting from use of or reliance upon this information

End of Safety Data Sheet