

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION
1.1 Product identifier
Product name: Methanol

Product codes(s): Methanol

Synonyms: Alcohol, methyl hydroxide; Methyl hydrate; Methyl alcohol; Wood alcohol; Wood spirit

REACH Registration Number: No data available

1.2 Relevant identified uses of the substance or mixture and uses advised against
General use: Solvent, fuel, feedstock

Uses advised against: No uses advised against

1.3 Details of the supplier of the safety data sheet
Distributor

Mitsubishi International Corporation

1221 McKinney St, Suite, 3500

Houston, Texas 77010

+1-713-652-9245

1.4 Emergency telephone number: Chemtrec: +1-800-424-9300
SECTION 2 - HAZARDS IDENTIFICATION
2.1 Classification of substance or mixture
Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquid - Category 2 [H225]

Acute toxicity, oral - Category 3 [H301]

Acute toxicity, dermal - Category 3 [H311]

Acute toxicity, inhalation - Category 3 [H331]

Specific target organ toxicity, single exposure - Category 1 (STOT SE 1) [H370]

2.2 Label Elements
Hazard Symbol(s):


GHS02



GHS06



GHS08

Signal Word:

Danger

Hazard Statement(s):

H225 - Highly flammable liquid and vapor

H301 - Toxic if swallowed

H311 - Toxic in contact with skin

H331 - Toxic if inhaled

H370 - Causes damage to organs: eyes, skin, respiratory system, central nervous system, gastrointestinal tract.

Precautionary Statements:
[Prevention]

P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking.

P233 - Keep container tightly closed.

P240 - Ground and bond container and receiving equipment.

P241 - Use explosion-proof electrical, ventilating, lighting and mixing equipment.

P242 - Use only non-sparking tools.

P243 - Take precautionary measures against static discharge.

P260 - Do not breathe fumes, mists, vapors and spray.

P280 - Wear protective gloves, protective clothing, eye protection and face protection.

P264 - Wash hands thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P271 - Use only outdoors or in a well-ventilated area.

[Response]

P370 + P378 - In case of fire: Use water fog, foam, dry chemical or carbon dioxide for extinction.

P303 + P361 + P353 - IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water or shower.

P363 - Wash contaminated clothing before reuse.

P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.

P330 - Rinse mouth with water.

P321 - Specific treatment: Refer to product label and Section 4. Contact a POISON CENTER or doctor.

P304 + P340 + P311 - IF INHALED: Remove victim to fresh air and keep at rest in a comfortable position for breathing. Call a POISON CENTER or doctor/water or shower.

[Storage]

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

P405 - Store locked up.

[Disposal]

P501 - Dispose of contents in accordance with national and local regulations.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

% by Weight	Ingredient	CAS Number	EC Number	Index Number	EC Classification
>99	Methanol	67-56-1	200-659-6	603-001-00-X	F, R11; Xn, R68, R20/21/22

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to the health or the environment and hence require reporting in this section.

3.2 Mixtures

Chemical characterization (preparation)

Not applicable

SECTION 4 - FIRST AID MEASURES

4.1 Description of first aid measures

In all cases of doubt, or when symptoms persist, seek medical attention.

Inhalation: If product vapor or mists causes respiratory irritation or distress, move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. If symptoms persist, seek medical attention immediately.

Eyes: Immediately flush eyes with large amounts of water for 15 minutes. Remove contact lenses, if present and easy to do, after the first 2 minutes and continue rinsing, lifting upper and lower eyelids occasionally. Obtain immediate medical attention, preferably from an ophthalmologist.

Skin: Flush skin with large amounts of water while removing contaminated clothing. Wash affected area with soap and water. Wash contaminated clothing and shoes thoroughly before reuse. Seek prompt medical attention if irritation persists.

Ingestion: Ingestion of methanol is potentially life threatening. Onset of symptoms may be delayed for 18 to 24 hours after digestion. Rinse mouth with water if victim is conscious. Do not induce vomiting unless directed to do so by medical personnel. If conscious, alert and able to swallow, give the victim 2 - 4 cupfuls of water or milk to drink. Never give anything by mouth to an unconscious person. Get immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Potential health symptoms and effects

Eyes: Causes eye irritation characterized by redness, burning sensation, tearing, swelling and inflammation. May cause corneal injury and painful sensitization to light. Continued exposure may cause lesions. Vapors and fumes can cause eye irritation.

Skin: May cause skin irritation. Methanol is a defatting agent. Repeated or prolonged exposure may cause drying and cracking of skin. Absorption through the skin can be toxic. Symptoms may be similar to inhalation exposure.

Inhalation: Irritating to mucous membranes and to the respiratory system. Causes central nervous system depression and particularly affects the optic nerve. Symptoms of over-exposure may include headache, drowsiness, nausea, vomiting, blurred vision, blindness, narcosis, coma and death.

Ingestion: Ingestion of 100 - 125 ml (~3 to 4 oz.) can be fatal or cause serious, irreversible injury such as blindness. Symptoms are similar to those for inhalation, but severity and speed of appearance may be greater. May cause central nervous system depression, characterized by excitement, followed by headache dizziness, drowsiness and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.

Chronic: Prolonged or repeated contact with skin may defat tissue causing dermatitis or aggravate existing skin problems. Pre-existing skin, eye and respiratory disorders may be aggravated by exposure to this product. Impaired kidney, liver and central nervous system functions from pre-existing disorders may be aggravated by exposure to this product. Chronic exposures may cause reproductive disorders and teratogenic effects. Refer to Section 11.2.

4.3 Indication of any immediate medical attention and special treatment needed

Advice to Doctor/Physician and Hospital Personnel: Effects may be delayed. Ethanol may inhibit methanol metabolism.

SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishable media

Suitable methods of extinction: Use media such as water fog, water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable methods of extinction: Methanol will float on water. As a result water using water jets or streams may spread the fire.

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapor. Methanol burns with a clean, clear flame that is almost invisible in daylight. Vapors may form an explosive mixture with air. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Vapors are easily ignited by heat, sparks or flame. Containers may explode if exposed to fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Symptoms of overexposure to these gases may not be apparent. Seek medical advice.

Explosion hazards: Vapor forms an explosive mixture with air.

5.3 Advice for firefighters

Responders should stay upwind. Full protective equipment including self-contained breathing apparatus should be used (HAZMAT suits) if there is liquid methanol or if vapor levels are above the threshold limit value (TLV). Flames may be invisible during the day. The use of infra-red and/or heat detection devices is recommended. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion when exposed to extreme heat. If possible firefighters should control runoff water to prevent environmental contamination.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear appropriate protective clothing designated in Section 8. Remove all sources of ignition. Ventilate the area. Keep unnecessary and unprotected personnel from entering the hazard area.

6.2 Environmental precautions

Do not flush to sewer. Avoid dispersal of spilled material or runoff and prevent contact with soil and entry into drains, sewers or waterways.

6.3 Methods and materials for containment and cleaning up

Approach spill from upwind direction. Cover drains and contain spill. Recover liquid where possible, or dilute with water or use alcohol-resistant foam to reduce fire hazard. Collect liquid in an approved container, or cover with a large quantity of inert absorbent. Do not use combustible material such as sawdust. Collect product using non-sparking tools and place into approved container for proper disposal. Observe material restrictions (Sections 7.2 and 10.5). Clean contaminated area with soap and water.

US regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities.

6.4 Reference to other sections

For indications about waste treatment, see Section 13.

SECTION 7 - HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Keep away from sources of ignition. No smoking. Wear all appropriate protective equipment specified in Section 8. Wash hands thoroughly after handling. Remove contaminated clothing and wash before reuse. Keep containers closed when not in use.

Advice on protection against fire and explosion

Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use non-sparking type tools and equipment, including explosion proof ventilation.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool, dry, well-ventilated storage areas in closed containers. Keep away from oxidizers, acids and bases.

Transfer to approved containers having correct labeling. DO NOT store in aluminum or lead containers. (Anhydrous methanol is non-corrosive to most metals at ambient temperatures except lead and magnesium. Coatings of copper and its alloys, zinc or aluminum are unsuitable for storage as they are attacked slowly. Mild Steel is the recommended construction material for tanks.)

Plastics may be used for short-term storage, but are not recommended for long-term use due to deterioration effects and the subsequent risk of contamination.

Empty containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition.

Outside or detached storage is recommended. Tanks must be grounded, vented and have vapor emission controls including floating roofs, inert gas blanketing to prevent the formation of explosive mixtures and pressure vacuum relief valves to control tank pressures. Tanks should be of welded construction and should also be diked.

7.3 Specific end uses

Apart from the uses mentioned in Section 1.2, no other specific uses are stipulated.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

CAS Number	Ingredient	OSHA PEL - TWA	ACGIH TLV	NIOSH
67-56-1	Methanol	200 ppm; 250 mg/m ³	200 ppm; 160 mg/m ³ TWA 250 ppm; 327 mg/m ³ STEL Skin designation	200 ppm; 260 mg/m ³ TWA; 250 ppm; 325 mg/m ³ STEL; 6,000 ppm IDLH Skin designation

8.2 Exposure controls

Individual protection measures: The level of risk of exposure to methanol will dictate the appropriate level of personal protective equipment (PPE) required. Wear protective clothing and chemical resistant footwear to prevent repeated or prolonged contact with methanol. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.

Hygiene measures: Facilities storing or using this material should be equipped with an eyewash station and safety shower. Change contaminated clothing. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking or using the lavatory.

Eye/face protection: Wear protective chemical goggles and a face shield use. Refer to 29 CFR 1910.133, ANSI Z87.1 or European Standard EN 166.

Hand Protection: Wear rubber (butyl or nitrile) or neoprene gloves for protection against materials in Section 3. Gloves should be impermeable to chemicals and oil. Breakthrough time of selected gloves must be greater than the intended use period.

Other protective equipment: Protective clothing. Protective boots, if the situation requires.

Respiratory Protection: Always use an approved respirator when vapor/aerosols are generated. Where risk assessment shows air-purifying respirators are appropriate use a full-faced respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Environmental exposure controls: Do not empty into drains.

PPE must not be considered a long-term solution to exposure control. PPE usage must be accompanied by employer programs to properly select, maintain, clean fit and use. Consult a competent industrial hygiene resource to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Clear, colorless liquid
Odor	Mild, pungent alcoholic
Odor Threshold	59 ppm
Molecular Weight	32.04
Chemical Formula	CH ₃ OH
pH	No data available
Freezing/Melting Point, Range	-98 °C (-144.4 °F)
Boiling Point	64.5 °C (148.1 °F)
Evaporation Rate	5.9 (n-BuAc = 1); 5.3 (Ether = 1)
Flammability (solid, gas)	Not applicable
Flash Point	11 °C (51.8 °F), closed cup
Autoignition Temperature	455 °C (851 °F), ASTM E-659
Decomposition Temperature	No data available
Lower Explosive Limit (LEL)	6% (v)
Upper Explosive Limit (UEL)	36.5% (v)
Vapor Pressure	97 mm Hg @ 20 °C
Vapor Density	1.11 (Air = 1)
Specific Gravity	0.791 - 0.793
Viscosity	0.55 cps @ 20 °C
Soluble in	Water, Ethanol, Ether, Acetone, Chloroform
Partition Coefficient: n-octanol/water	-0.82/-0.66
Saturation Concentration	166 g/m ³
Volatiles by Volume @ 20 °C	100%

9.2 Other data

No data available

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity

No special reactivity has been reported.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Vapors may form explosive mixture with air. Reacts with strong oxidizing agents and halogenated hydrocarbons. Avoid excessive heat and sources of ignition. The substance decomposes on burning and may produce irritating fumes.

10.4 Conditions to avoid

Ignition sources, high temperatures, incompatible materials, oxidizers. Avoid impact. Avoid confined areas.

10.5 Incompatible materials

Avoid contact with strong oxidizing agents, strong mineral or organic acids, strong bases and halogenated hydrocarbons. Contact with these may cause a violent or explosive reaction. May be corrosive to lead, aluminum, magnesium and platinum.

10.6 Hazardous decomposition products

Thermal decomposition products include oxides of carbon, formic acid, formaldehyde and other toxic fumes and gases.

SECTION 11 - TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Oral Toxicity

LDLO, Human: 143 mg/kg

LD50, Rat: 1,187 - 2,769 mg/kg

Acute inhalation toxicity

LC50, Rat: 85.26mg/l, 4 h (IUCLID)

Acute dermal toxicity

LD50, Rabbit: 17,100 mg/kg

Skin irritation

No data available

Eye irritation

Causes eye irritation.

Sensitization

No data available

Genotoxicity

No data available

Mutagenicity

No data available

Specific organ toxicity - single exposure

May cause drowsiness or dizziness.

Specific organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Further information

Material is slowly eliminated from the body; therefore, it can have cumulative toxicity effects with repeated exposures. Methanol is a potential hazard to the fetus. May cause liver disorder (e.g. edema, proteinuria) and damage. Significant exposure to this product may adversely affect people with chronic disease of the respiratory system, central nervous system, kidneys, liver, skin and/or eyes.

Methanol is not listed as a carcinogen by ACGIH, IARC, NTP or OSHA. No data is available regarding the mutagenicity and/or teratogenicity of this material, nor is there any available data that indicates it causes adverse developmental and/or fertility effects in humans. Developmental effects have been observed in the offspring of rats and mice exposed to methanol by inhalation. These included skeletal, cardiovascular, urinary system and central nervous system (CNS) malformations in rats and increased resorptions and skeletal and CNS malformations in mice.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12 - ECOLOGICAL INFORMATION**12.1 Toxicity**

Methanol is dangerous to aquatic life in high concentrations. A study of methanol's toxic effects on sewage sludge bacteria reported little effect on digestion at 0.1% while 0.5% methanol retarded digestion. Methanol will be broken down into carbon dioxide and water.

Acute and prolonged toxicity to fish: LC50 - Pimephales promelas (Fathead minnow), 96 h: 29,400 mg/l

Toxicity to aquatic invertebrates: EC50 - Daphnia magna (Water flea), static, 24 h: 23,500 mg/l (immobilization)

12.2 Persistence and degradability

Methanol is readily biodegradable in water (test: 99% OECD; BOD 80% ThOD).

When released into the air methanol is expected to exist in the aerosol phase and will be degraded from the ambient atmosphere by the reaction with photochemically produced hydroxyl radicals with an estimated half life of 17.8 days. When released into the soil, methanol is expected to readily biodegrade and leach into groundwater. When released into water, it is expected to have a half life of between 1 and 10 days.

12.3 Bioaccumulation potential

Methanol is not expected to bioaccumulate as the Partition Coefficient is <1.

12.4 Mobility

Mobility in soil is high.

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects**Additional ecological information**

Wastewater Purification: Sludge digestion is inhibited at 800 mg/l. Nitrification of activated sludge is inhibited at 160 mg/l.

Do not allow material to run into surface waters, waste water or soil.

SECTION 13 - DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

Methods of disposal: The generation of waste should be avoided or minimized whenever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Recycling is the recommended disposal method. Biological treatment may be used for dilute aqueous waste. Incineration should only be performed using a legally approved incinerator fitted with emission controls. Methanol wastes are not suitable for underground injection.

RCRA P-Series: No listing

RCRA U-Series: Methanol (CAS #67-56-1); waste number U154 (Ignitable waste)

SECTION 14 - TRANSPORT INFORMATION**United States Department of Transportation (Ground Transportation)**

Proper Shipping Name:	Methanol
Hazard Class:	3
UN:	1230
Packing Group:	II
NAERG:	Guide #131
CERCLA Reportable Quantity:	2,268 kg (5,000 lbs)



IMDG (Maritime Transport)
Proper Shipping Name: Methanol
Hazard Class: 3
UN: 1230
Packing Group: II
Marine Pollutant: No

IATA (Air Transportation)
Proper Shipping Name: Methanol
Hazard Class: 3
UN: 1230
Packing Group: II

SECTION 15 - REGULATORY INFORMATION

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

U. S. Federal Regulations

OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

OSHA Process Safety Management Standard: Methanol (CAS #67-56-1) is not regulated under OSHA PSM Standard 29 CFR 1910.119.

EPA Risk Management Planning Standard: Methanol (CAS #67-56-1) is not regulated under EPA RMP Standard (RMP) 40 CFR Part 68.

EPA Federal Insecticide, Fungicide and Rodenticide Act: This product is not a registered Pesticide under the FIFRA, 40 CFR Part 150.

TSCA Status: Methanol (CAS #67-56-1) is listed on the Toxic Substance Control Act (TSCA) Inventory. It is not subject to TSCA 12 (b) Export Notification.

Superfund Amendments and Reauthorization Act (SARA)

SARA Section 311/312 Hazard Categories: Fire Hazard, Acute Health Hazard, Chronic Health Hazard

SARA 313 Information: Methanol (CAS #67-56-1) is subject to the reporting levels established by Section 313 of the Emergency Planning and Community Right-to Know Act of 1986.

SARA 302/304 Extremely Hazardous Substance

No components of the product exceed the threshold (de minimis) reporting levels established by of these sections of Title III of SARA.

SARA 302/304 Emergency Planning & Notification

No components of the product exceed the threshold (de minimis) reporting levels established by of these sections of Title III of SARA.

Comprehensive Response Compensation and Liability Act (CERCLA): Methanol is a CERCLA reportable material.

Methanol (CAS #67-56-1): RQ = 2,268 kg (5,000 lbs)

Clean Air Act (CAA)

Methanol (CAS #67-56-1) is listed as Hazardous Air Pollutants (HAPs) designated in CAA Section 112 (b).

This product does not contain any Class 1 Ozone depletors.

This product does not contain any Class 2 Ozone depletors.

Clean Water Act (CWA)

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

U.S. State Regulations

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986

Methanol (CAS #67-56-1) is known to the State of California to cause reproductive harm (developmental).

Other U.S. State Inventories

Methanol (CAS #67-56-1) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/ Air Pollutants lists: CA, DE, ID, IL, ME, MA, MN, NJ, NY, PA, WA.

Global Chemical Inventory Lists

Country	Inventory Name	Inventory Listing*
Canada:	Domestic Substance List (DSL).	Yes
Canada:	Non-Domestic Substance List (NDSL).	No
Europe:	Inventory of New and Existing Chemicals (EINECS)	Yes
United States:	Toxic Substance Control Act (TSCA)	Yes
Australia:	Australian Inventory of Chemical Substances (AICS)	Yes
New Zealand:	New Zealand Inventory of Chemicals (NZIoC)	Yes
China:	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan:	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea:	Existing Chemicals List (ECL)	Yes
Philippines:	Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Yes

*"Yes" indicates that all components of this product are in compliance with the inventory requirements administered by the governing country.

*"No" indicates that one or more components of this product are not on the inventory and are not exempt from listing.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

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For this product a chemical safety assessment was not carried out.

SECTION 16 - OTHER INFORMATION

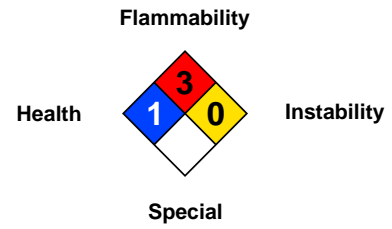
Hazardous Material Information System (HMIS)

Health	* 2
Flammability	3
Physical Hazard	0
Personal Protection	H

HMIS and NFPA Hazard Rating Legend

* = Chronic Health Hazard	2 = MODERATE
0 = INSIGNIFICANT	3 = HIGH
1 = SLIGHT	4 = EXTREME

National Fire Protection Association (NFPA)



Mitsubishi International Corporation cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in this sheet was written based on the best knowledge and experience currently available.

Version 1

Preparation date: 14 May 2015