MESA Specialty Gases & Equipment
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Domestic US: (866) 470-6372; International 714-434-7102
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SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION

Chemical Name:	Methanol
Chemical Formula:	CH3OH
Chemical Family:	Flammable Liquefied Gases
Hazard Classification:	Methanol, UN1230, Red Label
Product Use Description:	Analytical Standard and General Laboratory Applications
Company:	MESA Specialty Gases & Equipment 2427 South Anne Street Santa Ana, California 92704 USA
Phone Number for Information:	Infotrac
Emergency Contact:	800-535-5053 (Int'l: 352-323-3500)

SECTION 2 – HAZARD(S) IDENTIFICATION

SIGNAL WORD - DANGER

HAZARD STATEMENTS: Extremely flammable liquid and vapor.
Toxic if swallowed, comes into contact with skin or inhaled.

PRECAUTIONARY STATEMENTS:

General: Use in accordance with Safety Data Sheets.
Do not ingest or inhale or allow to come into contact with skin or clothes.
Wear protective gloves, eye protection and face protection.
Causes damage to organs.

Prevention: Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.

Response: Leaking gas fire: Do not extinguish unless leak can be stopped safely.
In case of leakage, eliminate all ignition sources.
Do not open valve until prepared to use.
Always use a back flow preventative device in piping.

Storage: Protect from sunlight. Store in a well-ventilated place.
Keep container tightly closed

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	CONCENTRATION
Methanol	67-56-1	100.00%

SECTION 4 – FIRST AID MEASURES

ROUTE OF EXPOSURE:

INHALATION: Contact a poison control center or doctor. Remove victim(s) to fresh air as quickly as possible. Trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Only trained personnel should administer supplemental oxygen.

EYE CONTACT: Contact a poison control center or doctor. Immediately flush eyes with plenty of water for a minimum of 15 minutes, using enough force to open the eyelids. Have the victim "roll" their eyes. Victim must seek immediate medical attention.

SKIN CONTACT: Contact a poison control center or doctor. Immediately flush skin with plenty of water for a minimum of 15 minutes. Remove any contaminated clothing and shoes.

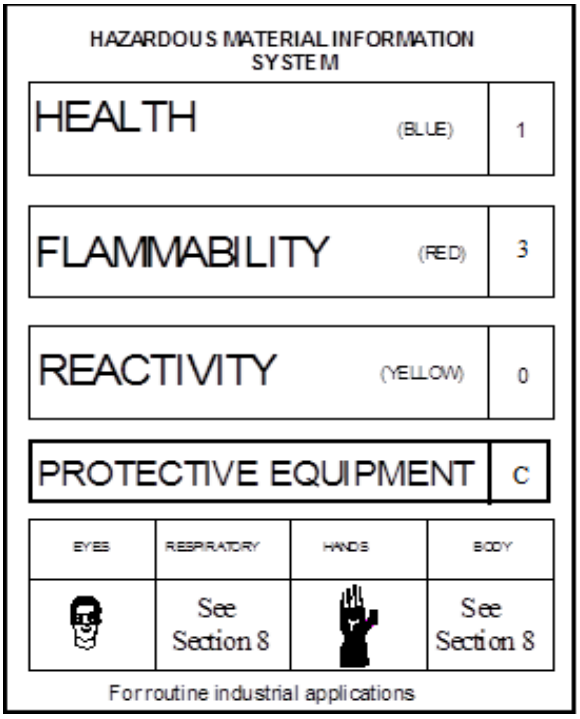
INGESTION: Immediately contact a poison center or doctor. Rinse mouth. Do not induce vomiting. If conscious, the victim should drink milk, egg whites or a large quantity of water. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration.

SYMPTOMS:

INHALATION: Inhalation of Methanol vapors will cause central nervous system depression. The symptoms of exposure can include headaches, nausea, dizziness, drowsiness, confusion and unconsciousness. Irritation of the nose, throat and other tissues of the upper respiratory system may also occur. There are reports that inhalation can cause blindness and liver damage. Other symptoms, similar to those described under "Ingestion", may also develop. Severe inhalation overexposures may be fatal.

CONTACT WITH SKIN or EYES: Contact of the liquid with the eyes may cause redness and pain. Direct contact with the skin (especially after prolonged exposure) can cause irritation. Prolonged or repeated skin overexposures can cause dermatitis.

INGESTION: Methanol is toxic by ingestion. The fatal dose in humans is between 2 and 8 ounces. Death may be prompt, but it is usually delayed for several days and the mortality rate is high. Ingestion of Methanol will cause visual disturbances, central nervous system depression, leg cramps, vertigo, restlessness, nausea, vomiting, abdominal or back pain, apathy and coma. One of the characteristic symptoms of Methanol poisoning is visual disturbance, including dimness of vision with dilated pupils, which react poorly to light. Acidosis may also occur, as a result of methanol oxidation to fomic acid, which can severely reduce the body's alkali reserves.



HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.

ACUTE: Inhalation of Methanol vapors can irritate the upper respiratory system and cause central nervous system depression (producing symptoms such as headaches, drowsiness and confusion). Inhalation, skin contact or ingestion of Methanol may cause blindness and liver damage. Inhalation of high concentrations of the vapors or ingestion may be fatal. Direct skin or eye contact may be irritating.

CHRONIC: Prolonged or repeated skin overexposures can cause dermatitis. Chronic inhalation of Methanol vapors can cause permanent blindness and liver damage. Refer to Section 12 (Toxicology Information) for additional information.

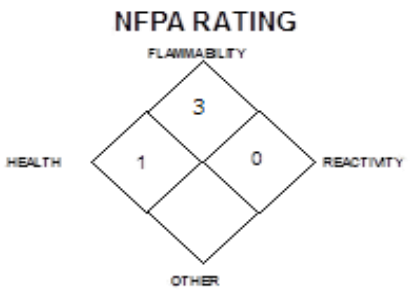
TARGET ORGANS: Skin, eyes, central nervous system.

SECTION 5 – FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Extinguish Methanol fires using water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This is a Class IB flammable liquid. When involved in a fire, this material will ignite and produce toxic gases (including Carbon Monoxide, Carbon Dioxide and Formaldahyde). Methanol burns with a non-luminous, bluish flame. The vapors of Methanol are heavier than air and may spread long distances. Distant ignition and flash-back are possible.

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Static discharge may cause Methanol to ignite.



SPECIAL FIRE FIGHTING PROCEDURES: RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO METHANOL WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus and Fire-Retardant Personal Protective equipment should be worn. Adequate fire protection must be provided during rescue situations. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. The best fire-fighting technique may be simply to let the burning gas escape from the pressurized cylinder, tank car, or pipeline. Stop the leak before extinguishing the fire. If the fire is extinguished before the leak is sealed, the leaking gas could explosively re-ignite without warning and cause extensive damage, injury, or fatality. In this case, increase ventilation (in enclosed areas) to prevent flammable or explosive mixture formation. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Because of the potential for a BLEVE, evacuation of non-emergency personnel is essential. If water is not available for cooling or protection of vessel exposures, evacuate the area. Refer to the North American Emergency Response Guidebook for additional information.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES: Wear respiratory protection and self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Avoid breathing vapors, mist or gas. Monitor oxygen level. Shut off gas supply if this can be done safely. Isolate and ventilate the area until gas has dispersed.
SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a release, clear the affected area, protect people, and respond with trained personnel. Adequate fire protection must be provided. Minimum Personal Protective Equipment should be Level B: fire-retardant protective clothing, gloves resistant to tears, and Self-Contained Breathing Apparatus.

Use only non-sparking tools and equipment. Locate and seal the source of the leaking gas. Protect personnel attempting the shut off with water spray. Allow the gas to dissipate. Monitor the surrounding area for combustible gas levels and oxygen. Combustible gas concentration must be below 10% of the LEL (LEL = 6.0%) prior to entry. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Attempt to close the main source valve prior to entering the area. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in place or remove it to a safe area and allow the gas to be released there.

THIS IS AN EXTREMELY FLAMMABLE LIQUID. Protection of all personnel and the area must be maintained.

ENVIRONMENTAL PRECAUTIONS: Prevent spreading of vapors through sewers, ventilation systems, and confined areas. Do not discharge materials into any place where their accumulation could be dangerous.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP: Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. Ventilate enclosed areas. Move leaking cylinder to fume hood or safe outdoor area. Use monitoring equipment if hazardous conditions are suspected or likely to occur.

SECTION 7 – HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Protect cylinders against physical damage. Store in cool, dry, well-ventilated area, away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to exceed 52°C (125°F). Isolate from oxidizers such as oxygen, chlorine, or fluorine. Use a check valve or trap in the discharge line to prevent hazardous backflow. Post "No Smoking or Open Flame" signs in storage and use areas. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting. Never tamper with pressure relief devices in valves and cylinders. Electrical equipment should be non-sparking or explosion proof. The following rules are applicable to situations in which cylinders are being used:

Before Use: Move cylinders with a suitable hand truck. Do not drag, slide, or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap, if provided, in place until cylinder is ready for use.

During Use: Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

After Use: Close main cylinder valve. Replace valve protection cap, if provided. Mark empty cylinders "EMPTY".

NOTE: Use only DOT or ASME code containers. Earth-ground and bond all lines and equipment associated with Methanol. Close valve after each use and when empty. Cylinders must not be recharged except by or with the consent of owner. For additional information refer to the Compressed Gas Association Pamphlet P-1, Safe Handling of Compressed Gases in Containers. Additionally, refer to CGA Bulletin SB-2 "Oxygen Deficient Atmospheres".

CONDITIONS FOR SAFE STORAGE: Cylinders should be secured with mounting brackets away from heavily traveled areas. Use oldest cylinders in stock first to prevent full cylinders from being stored for excessive periods of time. Full and empty cylinders should be segregated. Keep cylinder in dry, cool, well ventilated area away from heat, flame, sparks or corrosive chemicals. Cylinders should be moved by suitable hand trucks. Close valve after each use and when empty.Cylinder valve guards or caps should be in place. Keep cylinder at room temperature (21°C/ 70°F). Store containers in location free from fire risk and away from any sources of heat and ignition. Keep cylinder at least 20 feet away from combustible material, oxidizers, and Oxygen. Use equipment rated for cylinder pressure.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

COMPONENT	OSHA PEL	ACGIH TLV
Methanol	1000 ppm	1000 ppm

APPROPRIATE ENGINEERING CONTROLS: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

INDIVIDUAL PROTECTIVE MEASURES: Safety glasses, work gloves, and safety shoes should be worn when handling high pressure cylinders or hazardous materials. Avoid skin contact with leaking liquid. Wear suitable protective equipment. Ensure adequate ventilation, especially in confined areas. Do not eat, drink, or smoke when using.
RESPIRATORY PROTECTION: Maintain oxygen levels above 19.5% in the workplace. Maintain level of gas below the level listed in Section 2 (Composition and Information on Ingredients). Use supplied air respiratory protection if oxygen levels are below 19.5% or during emergency response to a release of Methanol. If respiratory protection is required, follow the requirements of the Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or equivalent State standards.

EYE PROTECTION: Splash goggles or safety glasses, for protection from rapidly expanding gases and splashes of Methanol.

HAND PROTECTION: Wear Nitrile or Viton gloves for routine industrial use when handling Methanol. Properly dispose of contaminated gloves. Wash and dry hands.

BODY PROTECTION: Use body protection appropriate for task. Transfer of large quantities under pressure may require protective equipment appropriate to protect employees from splashes of liquefied product, as well as fire retardant items.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless	Upper/lower flammability/explosive limits: Upper 36% / Lower 6%
Odor: Strong alcohol	Vapor Pressure: 25°C
Odor threshold: No data available	Vapor Density (Air=1): 1.11
pH: N/A	Relative Density (Water=1): 0.791 g/mL at 25°C (77°F)
Melting point/range: -98°C (-144°F)	Solubility (in water): completely miscible
Boiling point/range: 64.7°C (148.5°F)	Partition coefficient (n-octanol/water): -0.77
Flash Point: 9.7°C (49.5°F) - closed cup	Auto-ignition temperature: 455.0°C (851.0°F)
Evaporation Rate (Butyl Acetate=1): N/A	Decomposition temperature: No data available
Flammability (solid, gas): No data available	Visocity: N/A

SECTION 10 – STABILITY AND REACTIVITY DATA

Reactivity: No data available	**Conditions to avoid:** Contact with incompatible materials and exposure to heat, sparks, and other sources of ignition. Cylinders exposed to high temperatures or direct flame can rupture or burst.
Chemical Stability: Stable	**Incompatible materials:** Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
Possibility of hazardous reactions: Vapors may form explosive mixture with air.	**Hazardous Decomposition or Byproducts:** No data available.

SECTION 11 – TOXICOLOGICAL INFORMATION

LIKELY ROUTES OF EXPOSURE:
INHALATION: Contact a poison control center or doctor. Remove victim(s) to fresh air as quickly as possible. Trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Only trained personnel should administer supplemental oxygen.
EYE CONTACT: Contact a poison control center or doctor. Immediately flush eyes with plenty of water for a minimum of 15 minutes, using enough force to open the eyelids. Have the victim "roll" their eyes. Victim must seek immediate medical attention.
SKIN CONTACT: Contact a poison control center or doctor. Immediately flush skin with plenty of water for a minimum of 15 minutes. Remove any contaminated clothing and shoes.
INGESTION: Immediately contact a poison center or doctor. Rinse mouth. Do not induce vomiting. If conscious, the victim should drink milk, egg whites or a large quantity of water. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration.

SYMPTOMS/EFFECTS FROM EXPOSURE: Effects from ingestion: visual disturbances, central nervous system depression, leg cramps, vertigo, restlessness, nausea, vomiting, abdominal or back pain, apathy and coma. Effects from eye or skin contact: redness and pain, irritation. Effects from inhalation: blindness and liver damage.

ACUTE/CHRONIC TOXICITY: METHANOL:
LC50 (rat, inhalation) = 87.6 mg/l / 4 hours
LCLo (human, oral) = 143 mg/kg; central nervous system, pulmonary, gastrointestinal effects

SUSPECTED CANCER AGENT: Methanol is not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA, and therefore is neither considered to be nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: The liquid or vapors of Methanol can be irritating to contaminated tissue.

SENSITIZATION TO THE PRODUCT: Methanol is not known to cause sensitization in humans after prolonged or repeated exposures.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of Methanol on the human reproductive system.

Mutagenicity: Human mutation data are available for Methanol; these data were obtained from studies in which specific human cells were exposed to relatively high concentrations of this compound.
Embryotoxicity: Methanol is not reported to cause embryotoxic effects in humans.
Teratogenicity: No teratogenic effects have been described for Methanol.
Reproductive Toxicity: Methanol is not reported to cause adverse reproductive effects in humans.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Acute or chronic respiratory conditions, central nervous system conditions, eye disorders or skin problems may be aggravated by overexposure to Methanol.
RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate exposure. If necessary, administer liver function tests and eye and vision exams.
BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, Biological Exposure Indices (BEIs) are not applicable for Methanol.

CARCINOGENICITY: May cause cancer depending on duration and level of exposure.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotocity (aquatic and terrestrial): Methanol may be harmful or fatal to contaminated plant and animal life (especially if large quantities are released). Refer to Section 12 (Toxilogical Information) for additional information on effects on animals.
Persistence and degradability: No data available
Bioaccumulative potential: No data available
Mobility in soil: No data available

Other Effects: The mixture does not contain any class I or Class II ozone depleting chemicals.

SECTION 13 – DISPOSAL CONSIDERATIONS

Disposal: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Return cylinders with any residual product to MESA Specialty Gas & Equipment Inc. Do not dispose of locally.

SECTION 14 – TRANSPORTATION INFORMATION

DOT Classification:

Proper Shipping Name: Methanol
Class: 3 (6.1)
UN/ID No.: UN1230
Label: Flammable Liquid, Red Label

IATA Classification:

Proper Shipping Name: Methanol
Class: 3 (6.1)
UN/ID No.: UN1230
Label: Flammable Liquid, Red Label

Environment hazard: No

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code: N/A

SPECIAL PRECAUTIONS FOR USER: Avoid transport on vehicles where the load space is not separated from driver's compartment. Ensure that transporter is aware of the potential hazards of the load and knows what to do in event of an emergency. Contact supplier for complete transportation information.

SECTION 15 – REGULATORY INFORMATION

U.S. SARA REPORTING REQUIREMENTS: Methanol is not subject to the reporting requirements of Sections 302, and

LABELING:
DANGER: EXTREMELY FLAMMABLE GAS. CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED. MAY CAUSE RAPID SUFFOCATION BY DISPLACING OXYGEN IN THE AIR. MAY FORM EXPLOSIVE MIXTURES WITH AIR. May cause dizziness, nausea, drowsiness, vomiting, excess salivation, and loss of mobility/consciousness. May react explosively even in absence of air at elevated pressure and/or temperature. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources—No smoking. Use and store in well-ventilated areas. Leaking gas fire: Do not extinguish unless leak can be stopped safely. In case of leakage, eliminate all ignition sources. Do not open valve until prepared to use. Always use a backflow preventative device in piping. Use only with equipment rated for cylinder pressure. Close valve after each use and when empty. Cylinder temperature should not exceed 52°C (125°F). Use in accordance with Safety Data Sheet. FIRST AID: IF INHALED, remove to fresh air. If breathing is difficult, give Oxygen. Call a physician. IN CASE OF FROSTBITE, obtain immediate medical attention. DO NOT REMOVE THIS LABEL.

SECTION 16 – OTHER INFORMATION

Information contained in this data sheet is offered without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable. But the accuracy and completeness thereof, is not guaranteed and no warranty of any kind, either expressed or implied, is made with respect thereto. Since MESA Specialty Gases and Equipment Division of MESA International Technologies, Inc. shall have no control over the use of the product described herein, we assume no liability for loss or damage incurred from the proper or improper use of such product.

HISTORY:

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