SECTION 1 - IDENTIFICATION

US Methanol, LLC

Dow Industrial Plant

Route 25

Institute, WV 25112

Company Contact: TBD

Emergency Contact: CHEMTREC (Canada and US)

Product Methanol

Formula CH3OH

CAS Number 67-56-1

Chemical Family Alcohol

Synonyms Methyl Alcohol, wood alcohol, methyl hydroxide

SECTION 2 - HAZARD IDENTIFICATION

Classifications Flammable Liquid Category 2

 Acute Toxicity, Dermal Category 3

Acute Toxicity, Inhalation Category 3

Acute Toxicity, Oral, Category 3

Specific Target Organ Toxicity – Single Exposure Category 1



Labels Danger

 H225 Highly flammable liquid and vapor



 Danger

 H301 Toxic if swallowed

 H311 Toxic if in contact with skin

 H331 Toxic if inhaled



 Warning

 H370 Causes damage to organs

SECTION 2 - HAZARD IDENTIFICATION (continued)

Precautionary Statements

Prevention P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.

P233 Keep container tightly closed.

P240 Ground/Bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting equipment.

P242 Use non-sparking tools.

P243 Take action to prevent static discharges.

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P264 Wash thoroughly after handling.

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

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

P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response P301+P307+310+P311 If exposed or swallowed: Immediately call a Poison Control/doctor.

P302+P352 If on skin: Wash with plenty of soap and water.

P303+P353+P361 If on skin or hair: Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 If inhaled: Remove person to fresh air and keep comfortable for breathing. P308+P311 If exposed or concerned: Call a POISON CENTER or doctor/physician.

P361+P363+P364 Take off immediately all contaminated clothing and wash it before reuse

P370+P378 In case of fire: Use appropriate media to extinguish.

P330 Rinse mouth.

P321 Specific treatment (see label).

Storage P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P235 Keep cool.

Disposal P501 Dispose of contents/container in accordance with local/regional/national/international regulations

SECTION 3 - PHYSICAL DATA

Material Methanol

Concentration 99 – 100% wt

CAS 67-56-1

EINECS 200-659-6

Classification R11, R20 / 21/ 22

Exposure Limit 200 ppm TWA / 250 STEL ACGIH & OSHA

Boiling Point: 148.4°F / 64.7 °C

Vapor Pressure: 135 @ 25°C

Vapor Density (Air = 1) 1.11

Specific Gravity 0.791

Solubility (H2O) 100%

Evaporation Rate > 1

Appearance Clear, colorless fluid

Odor Alcoholic Odor Stability Stable

Conditions to Avoid Contact with excessive heat, open flame, sparks or ignition sources.

Materials to Avoid Strong oxidizing agents, chromic anhydride, lead perchlorate, and perchloric acids.

Hazardous Products May form carbon monoxide and carbon diode during combustion and emit

 an acrid smoke with irritating fumes.

Hazardous Polymerization Does not occur.

SECTION 4 - FIRST AID MEASURES

Exposure Limits 200 ppm TWA

 250 STEL ACGIH & OSHA

Effects of Short-Term (Acute) Exposure

Eye Contact Methanol is a mild to moderate eye irritant. High Vapor concentration or liquid contact with eyes causes irritation, tearing, and burning.

Skin Contact Methanol is moderately irritating to the skin. Methanol can be absorbed through the skin and harmful effects have been reported by this route of entry. Effects are similar to those described in “inhalation.”

Inhalation Inhalation of high airborne concentrations can also irritate mucous membranes, cause headaches, sleepiness, nausea, confusion, loss of consciousness, digestive and visual disturbances and even death.

Ingestion Swallowing even small amounts of methanol could potentially cause blindness or death. Effects of sub lethal doses may be nausea, headache, abdominal pain, vomiting, and visual disturbances ranging from blurred vision to light sensitivity.

NOTE: Odor threshold of methanol is several times higher than the TLV-TWA.

SECTION 4 - FIRST AID MEASURES (continued)

Effects of Long-Term (Chronic) Exposure

Inhalation / Skin Contact Repeated exposure by inhalation or absorption may cause systemic poisoning, brain disorders, impaired vision, and blindness. Inhalation may worsen conditions such as emphysema or bronchitis. Repeated skin contact may cause dermal irritation, dryness, and cracking.

 Medical Conditions Aggravated By Exposure

Inhalation Emphysema or bronchitis can be aggravated with exposure. Methanol exposure may aggravate existing eye, skin, kidney and liver disorders.

Emergency and First Aid Procedures

Swallowing Induce vomiting of conscious patient immediately by giving two glasses of water and pressing finger down throat. Drink a large amount of water, milk or sodium bicarbonate to dilute materials in stomach. Contact a physician immediately.

Skin Remove contaminated clothing. Wash skin with soap and large amounts of water. Obtain medical attention if irritation persists. Wash clothing before reuse.

Inhalation Move to fresh air. Give artificial respiration if not breathing. If breathing is difficult, oxygen may be given by qualitied personnel. Obtain medication attention.

Eyes Flush eyes with water for at least 15 minutes. Contact a physician immediately.

Note to Physician Treat symptomatically. 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. Acute exposure to methanol, either through ingestion or breathing a high airborne concentration can result in symptoms appearing between 40 minutes and 72 hours after exposure. Symptoms and signs are usually limited to CNS, eyes, and gastrointestinal tract. Because of the initial CNS’s effects of headache, vertigo, lethargy, and confusion, there may be an impression of ethanol intoxication. Blurred vision, decreased acuity, and photophobia are common complaints. Treatment protocols are available from most major hospitals and early collaboration with appropriate hospitals.

***Note: Emergency assistance may also be available from the local poison control center.***

SECTION 5 - FIRE FIGHTING & EXPLOSION DATA

Flash Point 52°F / 11°C Method TCC

Autoignition 725°F / 385°C

Lower Explosive Limit 5.5%

Upper Explosive Limit 36.5%

Sensitivity to Impact Low

Sensitivity to Static Low

Combustion Products Toxic gases and vapors; oxides; formaldehyde

Unusual Fire and Explosion Stay upwind. Isolate and restrict access to area. Vapors from this product are heavier than air and may travel a long distance along the ground and flashback. Material can burn with little to no visible flame in the daylight. Methanol water mixtures will burn unless very dilute. Mixtures with 25% or more Methanol are OSHA Class I Flammable Liquids.

Extinguishing Media Apply alcohol-type or all purpose-type foam by manufacturer’s recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

Special Fire Fighting Means Water will not cool methanol below its flashpoint. Use water spray to cool fire exposed containers and structures. Avoid water streams which may splash and spread the flammable liquid. Water spray can be used to reduce the intensity of the flames and dilute spills to a non-flammable mixture. Fire fighters should use self-contained breaking equipment and bunker gear.

 Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. Isolate for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Overview Flammable liquid which can bum without a visible flame. Release can cause immediate risk of fire and explosion. Eliminate all ignition sources, stop leak and use absorbent materials. If necessary, contain spill by diking. Fluorocarbon alcohol resistant foams may be applied to spill to diminish vapor and fire hazard. Maximize methanol recovery for recycling or re-use. Restrict access to area until completion of cleanup. Ensure cleanup is conducted by trained personnel only. Wear adequate personal protection and remove all sources of ignition. Notify all governmental agencies as required by law.

 SECTION 6 - ACCIDENTAL RELEASE MEASURES (continued)

Personal Protection Full-face, positive pressure, self-contained breathing apparatus or airline, and protective clothing must be worn. Protective firefighting clothing is not effective protection from methanol.

 Remedial Measures Flammable liquid. Release can cause an immediate fire/explosion hazard. Eliminate all sources of ignition, stop leak, and use absorbent materials. Collect liquid with explosion proof pumps. The material’s fire is invisible during day. Do not touch or walk through spilled product as it may be on fire and not visible. Stay upwind of the material which is heavier than air and can travel large distances.

 Small Spills Do not flush spill to sewer. Soak up spill with non-combustible absorbent material. Recover methanol and dilute with water to reduce fire hazard. Prevent spilled methanol from entering sewers, confined spaces, drains, or waterways. Restrict access to unprotected personnel. Put material in suitable, covered, labeled containers. Flush area with water.

Large Spills Do not flush spill to sewer. If necessary, contain spill by diking. Fluorocarbon alcohol resistant foams may be applied to spill to diminish vapor and fire hazard. Maximize methanol recovery for recycling or reuse. Collect liquid with explosion proof pumps.

Environmental Precautions Methanol is 100% soluble in water. Concentrations of methanol greater than 25% in water are flammable. Methanol in fresh or salt water may have serious effects on aquatic life. A study on 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 to carbon dioxide and water.

SECTION 7 - HANDLING AND STORAGE

Handling Procedures No smoking or open flame in storage, use, or handling areas. Use explosion proof electrical equipment. Ensure proper electrical grounding procedures are in place. Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

 Storage Store in totally enclosed equipment designed to avoid ignition and human contact. Tanks must be grounded, vented, and should have vapor emission controls. Tanks must be diked. Anhydrous methanol is non-corrosive to most metals at ambient temperatures. Storage tanks should be designed and built in conformance with good engineering practice for the material being stored. While plastics can be used for short term storage, they are generally not recommended for long-term storage.

 Incompatible Materials Lead, Aluminum, zinc, oxidizing agents, strong acids, strong bases, polyethylene, PVC (Polyvinyl chloride), nitrile

SECTION 7 - HANDLING AND STORAGE (continued)

Corrosion Rates for Several Construction Materials

Material of Construction Rate of Corrosion

Cast iron, monel, lead, nickel <0.508 mm/year

High silicone irom <0.510 mm/year

Polyethylene Some corrosion

Neoprene, phenolic resin, rubber (natural and butyl) Satisfactory

Polyvinyl Chloride, unplasticized Resistant

SECTION 8 - EXPOSURE CONTROL / PERSONAL PROTECTION

Ventilation Provide adequate ventilation or exhaust to meet the TLV / PEL requirements. Supplied air or self-contained breathing equipment recommended for exposures above PEL. Organic vapor cartridge respirators not recommended for methanol vapor exposures.

Eye Protection Have available and wear as appropriate chemical splash goggles or safety glasses (side shields preferred).

Skin Protection Rubber gloves and protective aprons or clothing should be used to prevent skin contact. For operators where spills or splashing can occur, use impervious body covering and boots.

Respiratory Protection Provide adequate ventilation or exhaust to meet the TLV / PEL requirements. Supplied air or self-contained breathing equipment recommended for exposures above PEL. Organic vapor cartridge respirators not recommended for methanol vapor exposure.

Footwear Chemical resistant as a minimum.

Work / Hygiene Practices A safety shower and eye wash is recommended in the area of use. Wash with soap and water immediately after skin contact. Monitoring of the air in the workplace is recommended to facilitate maintaining methanol vapors below recommended TLV.

|  |
| --- |
| OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)  |
|   | EXPOSURE LIMITS  |
| OSHA PEL  | ACGIH TLV  |
| Chemical Name  | ppm  | mg/m3  | ppm  | mg/m3  |
| Methanol  | TWA  | 200  | 260  | 200\*  | 262  |
| STEL  | NE  | NE  | 250  | 328  |
| \*Skin Notation TVL Basis: critical effects; neuropathy, vision, central nervous system.  |

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance Clear, colorless liquid

Odor Mild characteristic alcohol odor

Odor Threshold 4.2 – 5960 ppm (recognition 53 – 840 ppm)

pH Not Applicable

Melting / Freezing Point -144° F (-97.6° C)

Boiling Point 149° F ( 64.7° C)

Flash Point 51.8° F ( 11° C)

Critical Temperature 560° F (293.4° C)

Autoignition Temperature 867° F ( 464° C)

Lower Explosive Limit 5.5%

Upper Explosive Limit 36.5%

Specific Gravity 0.791

Vapor Density 1.105 at 60° F (15° C)

Evaporation Rate 4.1 (butyl acetate = 1)

Solubility in Water Completely soluble

Solubility in Other Liquids Soluble in all proportions in other alcohols, esters, ketones and most other organic solvents

Partition Coefficient Log 0.82

SECTION 10 - STABILITY AND REACTIVITY

Chemical Stability Stable under normal conditions.

Incompatibility Avoid contact with bleach, strong oxidizers, strong mineral or organic acids, and strong bases. Contact with these materials may cause a violent or explosive reaction. Maybe corrosive to lead, aluminum, magnesium, and platinum. PVC

Conditions of Reactivity Presence of incompatible materials and ignition sources.

Hazardous Decomposition Formaldehyde, carbon dioxide, carbon monoxide and flammable gases

Hazardous Polymerization Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute Exposure Poison. May be fatal or risk of blindness if swallowed. Toxic if ingested, in contact with skin or inhaled.

Chronic Exposure Poison. May be fatal or risk of blindness if swallowed. Toxic if ingested, in contact with skin or inhaled.

 Exposure Limits 200 ppm TWA

 250 STEL ACGIH & OSHA

 Irritancy Dermal = 300 mg/kg

 Inhalation – Vapor = 3 mg/l

 Oral = 100 mg/kg

 Sensitization This product is not anticipated to be a sensitizer.

 Carcinogenicity No component of this product present at levels greater than or equal to 0.1% is identified as a probable, possible or confirmed human carcinogen by IARC, ACGIH, NTP or OSHA.

Teratogenicity This product is not anticipated to be a teratogen.

Reproductive Toxicity This product has been reported to cause birth defects in rats exposed to 20,000 ppm.

Mutagenicity No available data.

Synergistic Products None Known.

SECTION 12 - ECOLOGICAL INFORMATION

Environmental Toxicity Methanol in fresh or salt water may have serious effects on aquatic life. A study on methanol’s toxic effects on sewage sludge bacteria reported little effect on digestion at 0.1% while 0.5% methanol hindered digestion. Methanol will be broken down into carbon dioxide and water.

Biodegradability Biodegrades easily in water.

Terrestrial/Microorganism Toxicity

Acute Ecological data does not exist.

Chronic Ecological data does not exist.

Bioaccumulation/Accumulation Not Established

Chemical Fate Information Persistence & Degradability – Readily biodegradable.

General Comments Any other adverse environmental effects, such as environmental fate (exposure), ozone depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and global warming potential are indicated in this section if data exists. Otherwise, this data has not been established.

SECTION 13 - DISPOSAL CONSIDERATIONS

General Comments Review federal, provincial, or state and local government requirements prior to disposal. Store material for disposal as indicated in Section 7 “*Handling and Storage”*. Disposal by controlled incineration or by secure land fill may be acceptable.

 Prevent entry into sewers, drains, ditches, underground or confined spaces and waterways.

 Product Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated Packaging Dispose of as unused product.

SECTION 14 - TRANSPORTATION INFORMATION

Transport of Dangerous Goods Methanol, Class 3(6.1)

 UN1230, P.G. II

 Limited Quantity: ≤ 1 liters

US Department of Transport (49 CFR) (Domestic Only)

 Methanol, Class C, UN1230, P.G. II

 (RQ 5000 lbs/2270 kg)

 Limited Quantity: ≤ 1 liters

SECTION 15 - REGULATORY INFORMATION

United States

DOT Label Symbol and Hazard Classification



SARA Title III (Superfund Amendments and Reauthorization Act)

311/312 Hazard Categories Fire Hazard, Immediate (Acute) Health Effects, Chronic Health Effects

Fire Yes

Pressure Generating: No

Reactivity No

Acute Yes

Chronic Yes

 SECTION 15 - REGULATORY INFORMATION (continued)

CERCLA (Comprehensive Response, Compensation, and Liability Act)

Chemical Name Methanol

Weight % 99 – 100

CERCLA RQ 5000 pounds

States with Special Requirements

CA Hazardous Substance

Delaware Air Quality Management

Illinois Toxic Air Contaminant

Maine Hazardous Air Pollutant

Massachusetts Hazardous Substance

Minnesota Hazardous Substance

New Jersey RTK Hazardous Substance

New York Hazardous Substance

Pennsylvania Hazardous Substance

Washington PELs for Air Contaminants

Canada WHMIS Hazard Symbol and Classification (CEPA, Domestic Substances List)

WHMIS CLASS Class B2 - Flammable and Combustible Material

 Class D1 - Materials Causing Immediate & Serious Toxic Effects

Class D2 – Materials Causing Other Toxic Effects

SECTION 16 - OTHER INFORMATION



DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

This information relates only to the material designed and may not be valid for such material used in combination with other materials or in any process. Such information is to the best of this Company’s knowledge believed to be accurate and reliable as of the date indicated. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the user’s responsibility to satisfy himself as to the suitableness and completeness of such information for his own particular use.

REVISIONS

Draft May 2017