established in 1981
megaloid laboratories

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Burlington, Ontario L7L 6G4

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1. PRODUCT IDENTIFICATION

Name: ***Methanol***

Synonyms: *methyl alcohol, methyl hydrate, wood alcohol, methyl hydroxide*

CAS# *67-56-1*

Product Uses: *Solvent, antifreeze (gasoline), mfg. of formaldehyde, tert-butyl ether & others.*

Supplier Identifier: *Megaloid Laboratories Limited*
5515 North Service Road, Suite 306, Burlington, ON L7L 6G4
Phone: 905-337-7411 / Fax: 905-337-1686

EMERGENCY INFORMATION: ***Call CHEMTREC @ (800) 424-9300 (CCN # 693764)***

2. HAZARDS

GHS Class *(category)*	***Flammable*** *(2)*	***Acute toxicity oral,*** *(3)*	***Acute toxicity dermal*** *(3)*	***Acute toxicity inhalation*** *(3)*	***Reproduction toxicity*** *(2)*	***STOT*** *(2)*
Signal Word	***DANGER***					
Hazard Statements	*highly flammable liquid & vapour (H225)*	*toxic if swallowed (H301)*	*toxic if contact with skin (H311)*	*toxic if inhaled (H331)*	*suspected of damaging the unborn child by inhalation (H361)*	*may cause damage to organs (H371)*

GHS labels

GHS Precautionary Statements for Labelling

Prevention	
P210	Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P240	Ground or bond container and receiving equipment.
P241	Use explosion-proof electrical, ventilating and lighting equipment.

P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260, P262, P264	Do not breathe vapours. Do not get in eyes or on skin. Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/eye protection/face protection.
Response	
P301, P310	IF SWALLOWED: immediately call a Poison Center / Doctor
P303, P361, P353	IF ON SKIN (or Hair): take off immediately all contaminated clothing. Rinse skid with water or shower.
P304, P340	IF INHALLED: remove person to fresh air and keep comfortable.
P308, P313	If exposed or concerned: call a Poison Center or Doctor
P370, P378	In case of fire: Use appropriate foam to extinguish.
P303, P361, P353	IF ON SKIN (or Hair): take off immediately all contaminated clothing. Rinse skid with water or shower.
Storage	
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
Disposal	
P501	Dispose of contents and container in accordance with local, regional, national and international regulations.

3. COMPOSITION

Chemical Name:	CAS No.	%	Other Identifiers
Methanol	*67-56-1*	*100*	*EC # 200-659-6*

4. FIRST AID

Inhalation

Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.

Skin Contact

Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.

Eye Contact

Wash eyes with plenty of water, holding eyelids open. Seek medical assistance if there is any irritation.

Ingestion

Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Immediate Medical Attention and Special Treatment

Note to Physicians: Methanol poisoning is often treated by administration of ethanol. This slows methanol metabolism, thus reducing the risk of poisoning from the products or methanol metabolism. A similar result is achieved by administering fomepizole.

First-aid Comments

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

5. FIRE FIGHTING & FLAMMABILITY

Extinguishing Media

Suitable Extinguishing Media

Foam, dry chemical, water fog or spray to cool, water jet spreads flames.

Combustion Products

Carbon monoxide, nitrogen oxides, smoke, formaldehyde & others

Specific Hazards Arising from the Product

Cannot accumulate a static charge on agitation or pumping.
NOTE: Methanol burns with a pale blue flame, virtually invisible in daylight. Solutions containing as little as 20% methanol can burn.

Special Protective Equipment and Precautions for Fire-fighters

Firefighters must wear SCBA. Fire-fighters may enter the area if positive pressure SCBA and full Bunker Gear is worn.

6. ACCIDENTAL RELEASE MEASURES

Serious Fire Potential:
blanket spill with foam as a precaution against accidental ignition. Take extreme care to avoid sparks – do not operate (turn on OR off) electrical appliances near spill, unless explosion proof.

Personal Precautions, Protective Equipment, and Emergency Procedures

Very Serious Fire Potential: blanket spill with foam as a precaution against accidental ignition. Take extreme care to avoid sparks – do not operate (turn on OR off) electrical appliances near spill, unless explosion proof.

Environmental Precautions

It is good practice to prevent releases into the environment.

Methods and Materials for Containment and Cleaning Up

Leak Precaution: Dyke to control spillage and prevent environmental contamination
Handling Spill: Ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminum shovel, & store in closed containers for recycling or disposal.

Other Information

Report spills to local health, safety and environmental authorities, as required.

7. HANDLING & STORAGE

Precautions for Safe Handling

Although this product cannot retain a static charge on agitation or transfer from one container to another, its flash point is low and it is prudent to ground or electrically bond both the source container and the receiving container, and transfer pump before transferring contents. Avoid splashing by ensuring that the product nozzle is below the surface in the receiving container. Empty containers may contain a flammable / explosive vapour. Keep containers, empty or full, tightly sealed unless in use.
Avoid generating or breathing product vapour. If vapour forms in use, install adequate ventilation. If dealing with a spill, and ventilation is impossible or impractical, wear a suitable respirator with an organic vapour cartridge.

Never cut, drill, weld or grind on or near this container. Avoid contact with skin and wash work clothes frequently. An eye bath and safety shower must be available near the workplace.

Conditions for Safe Storage

Store in a cool, dry environment, away from sources of ignition, heat and oxidising agents. Use non-sparking bronze or aluminium hand tools. All electrical and mechanical equipment (including lighting, switchgear and forklift trucks) used with or around this product must be explosion-proof.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV	*200ppm / 260mg/m^3*	**Ontario STEV**	*250ppm / 327mg/m^3*
ACGIH TLV	*200ppm / 260mg/m^3*	**ACGIH STEL**	*250ppm / 327mg/m^3*
OSHA PEL	*200ppm / 260mg/m^3 (skin)*	**OSHA STEL**	*250ppm / 327mg/m^3 (skin)*

Ventilation	*Mechanical ventilation may be required to control airborne titre*
Hands	*Butyl rubber gloves recommended*
Eyes	*Safety glasses with side shields – always protect the eyes*
Clothing	*No special protective clothing required*

Appropriate Engineering Controls

Engineering methods to control hazardous conditions are preferred. Methods include mechanical (local exhaust) ventilation, process or personnel enclosure and control of process conditions. Administrative controls and personal protective equipment may also be required. Because of the high potential hazard associated with this substance, stringent control measures such as enclosure (closed handling systems) should be considered. To reduce the fire/explosion hazard, consider the use of an inert gas in the process system. Use approved explosion-proof equipment and intrinsically safe electrical systems in areas of use. For large-scale operations, consider the installation of leak and fire detection equipment along with a suitable, automatic fire suppression system. Use a non-sparking, grounded, ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Supply sufficient replacement air to make up for air removed by exhaust system.

9. PHYSICAL PROPERTIES

Appearance	*Clear, colourless; absorbs moisture from the air.*
Odour	*sharp, penetrating*
Odour threshold	*160 ppm*
pH	*Neutral*
Melting Point/Freezing Point	*-98 °C (-149°F) (freezing)*
Initial Boiling Point/Range	*65 °C (149 °F)*
Flash Point	*11 °C (52 °F) (closed cup)*
Evaporation Rate	*4.1 (n-butyl acetate = 1)*
Flammability (Solid, Gas)	*Not Available*

Upper/Lower Flammability or Explosive Limit	*36% (upper); 6% (lower)*
Vapour Pressure	*96 mm Hg at 20 ºC (68 ºF)*
Vapour Density (air = 1)	*1.1*
Relative Density (water = 1)	*0.791-0.793@ 20 ºC*
Solubility	*Very soluble in water; Highly soluble in common organic solvents.*
Partition Coefficient, n-Octanol/Water (Log Kow)	*-0.77*
Auto-ignition Temperature	*> 385 ºC (725 ºF)*
Specific Gravity	*0.791 (20/20Deg C)*
Viscosity	*0.75 centistokes at 20 ºC (68 ºF) (kinematic); 0.6 centipoises at 25 ºC (dynamic)*
Physical State	*Liquid*
Molecular Weight	*32 grams per mole*
Molecular Formula	*C-H4-O*

10. REACTIVITY

Reactivity
Dangerously reactive with strong oxidizing agents; halogens, strong acids or acid anhydrides; alkali metals; reacts explosively with powdered aluminum or magnesium; and with diethyl zinc; acetyl bromide
***Also** corrodes aluminum, copper and some grades of carbon steel at elevated temperature, attacks some elastomers including nylon and ABS.*

Chemical Stability
Stable; will not polymerize.

Possibility of Hazardous Reactions
None known.

Conditions to Avoid
Heat, open flames, sparks, static discharge, and other ignition sources.

Hazardous Decomposition Products
Carbon monoxide and formaldehyde.

11. TOXICITY

Prolonged exposure may cause dermatitis; may damage liver & kidneys; impairment of vision; symptoms of poisoning may be delayed 8 – 24 hours.

Acute Toxicity	
LD_{50} (oral)	*3000, 6000 & 7000mg/kg (monkey); 2530, 5600 & 7000mg/kg (rat), 5000mg/kg (pig), 7300mg/kg (mouse), 8000mg/kg (dog), 14,200mg/kg(rabbit) anecdotally, the lethal human dose is ~3000mg/kg*

LD50 (skin)	*15,800 & 17,100mg/kg (rabbit)*
LC50 (inhalation)	*64,000, 66,800 & 98,400ppm (rat), 62,000ppm (rabbit), 9925ppm (rhesus monkey), 60,600ppm (mouse), 33,400 & 65,200ppm (cat)*

Skin Corrosion/Irritation
Irritating if contact is prolonged.
Serious Eye Damage/Irritation
Liquid may irritate; vapour may irritate.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation
May irritate respiratory passages; vapour titres above 200-300ppm may cause headache, dizziness, drowsiness, intoxication – at this level, methanol vapour is severely irritating.
Skin Absorption
Methanol is a recognized skin absorption hazard (ACGIH & OSHA); however, just one case of toxicity by skin exposure alone has been reported.
Ingestion
Dizziness, headache, drowsiness, intoxication – not a route of industrial exposure.

NOTE: The absorption of methanol by ingestion or by inhalation may cause blindness!

STOT (Specific Target Organ Toxicity) - Repeated Exposure
Do not breathe vapours. If inhaled remove person to fresh air and keep comfortable for breathing.

Respiratory and/or Skin Sensitization
Not a sensitizer in humans or animals.
Carcinogenicity
Not a carcinogen. IARC: Not specifically listed. NTP: Not specifically listed. Carcinogen. Not specifically listed. ACGIH®: Not specifically designated.
Reproductive Toxicity
Development of Offspring
Possible teratogen/embryo toxin – California considers methanol to be a reproductive toxin, but see Part 15.
Germ Cell Mutagenicity
Not mutagenic.
Interactive Effects
Increases the toxicity of liver toxins like carbon tetrachloride; ethanol decreases the toxicity of methanol.

12. ECOLOGICAL INFORMATION

Bioaccumulation	*Not a bioaccumulator.*
Persistence and Degradability	***Biodegradation -*** *Biodegrades readily & very rapidly in the presence of oxygen; various degradation rates reported eg: 48% in 5 days & 93% in 2 days; ½-life in sandy loam 1-3 days; anaerobic degradation also rapid* ***Abiotic Degradation -*** *reacts slowly with atmospheric hydroxyl radicals; estimated ½-life in air is 17 days.*
Mobility in soil, water	*Sufficiently water soluble to move readily in soil & water.*
Aquatic Toxicity	
LC50 (Fish, 96hr)	*15,400& 19,230mg/litre (Lepomis macrochirus), 8530, 10,800, 11,850, 19,000 & 20,100 mg/litre (Oncorhynchus mykiss), 28,100 & 29,400 mg/litre (Pimephelas promelas) 7900-26,070mg/litre (Agonus*

	cataphractus), 28,000mg/litre (Alburnus alburnus) & others
EC50 (Crustacea, 48hr)	*>10,000, 18,260mg/litre (Daphnia magna), 12,000mg/litre (Nitocra spinipes)*
EC50 (Algae)	*3600 & 28,440mg/litre (Chlorella pyrenoidosa), 12,000mg/litre ("plankton")*
EC50 (Bacteria)	*18,750mg/litre (Tetrahymena pyriformis), 7690mg/litre (Paramecium caudatum) & others*

13. DISPOSAL

Waste Disposal

Do not flush to sewer, recycle solvent if possible, local regulations may permit disposal in sanitary landfill, may be incinerated in approved facility after mixing with a suitable flammable waste

Containers

Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.
Pails must be vented and thoroughly dried prior to crushing and recycling.
IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs).
Steel containers must be inspected, pressure tested & recertified every 5 years.

Never cut, drill, weld or grind on or near this container, even if empty

14. TRANSPORT CLASSIFICATION

Canada TDG	**PIN**	UN1230	
AND	**Shipping Name**	Methanol	
U.S.A. 49 CFR	**Class & Packing Group**	3(6.1), PG II	
***49CFR**	**Also shipped under Class & PG**	3, PG II	

Marine Pollutant	Not a Marine Pollutant	
ERAP Required	NO	
Reportable Quantity	5,000 lbs (2,270kg)	
E R G No.	131	

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's

Hazardous Materials/Dangerous Goods expert for information specific to your situation.

15. REGULATIONS

Canada DSL	On Inventory
U.S.A. TSCA	On Inventory
Europe EINECS	On Inventory

Canadian Regulations

CEPA - National Pollutant Release Inventory (NPRI)
Part 1A, Part 5.

U.S.A. Regulations

Immediately Dangerous to Life or Health (IDLH): 6000 ppm
Allowable Tolerances: Residues of methanol are exempted from the requirement of a tolerance when used as a solvent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. Residues of methanol are exempted from the requirement of a tolerance when used as a synergist in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. Residues of methanol are exempted from the requirement of a tolerance when used as a solvent, cosolvent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals.
OSHA Standards: Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 200 ppm (260 mg/cu m). Vacated 1989 OSHA PEL TWA 200 ppm (260 mg/cu m); STEL 250 ppm (325 mg/cu m), skin designation, is still enforced in some states.
NIOSH Recommendations: Recommended Exposure Limit: 10 Hour Time-Weighted Average: 200 ppm (260 mg/cu m), skin. Recommended Exposure Limit: 15 Minute Short-Term Exposure Limit: 250 ppm (325 mg/cu m), skin.
Threshold Limit Values: 8 hr. Time Weighted Avg (TWA): 200 ppm; 15 min Short Term Exposure Limit (STEL): 250 ppm. Skin. Biological Exposure Index (BEI): Determinant: methanol in urine;
Sampling Time: end of shift; BEI: 15 mg/L. The determinant may be present in biological specimens collected from subjects who have not been occupationally exposed, at a concentration which could affect interpretation of the result. Such background concentrations are incorporated in the BEI value. The determinant is nonspecific, since it is also observed after exposure to other chemicals.
Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non-air
quality health and environmental impact and energy requirements. Methanol is produced, as an intermediate or a final product, by process units covered under this subpart. Listed as a hazardous air pollutant (HAP) generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Methanol is included on this list.
State Drinking Water Guidelines: (FL) FLORIDA 5,000 ug/L; (MN) MINNESOTA 3000 ug/L; (NH) NEW HAMPSHIRE 4,000 ug/L; (WI) WISCONSIN 5000 ug/L.
CERCLA Reportable Quantities: Persons in charge of vessels or facilities are required to notify the National Response Centre (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 5000 lb or 2270 kg. The toll free number of the NRC is (800) 424-8802. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b).

RCRA Requirements: U154; As stipulated in 40 CFR 261.33, when methanol, as a commercial chemical product or manufacturing chemical intermediate or an off-specification commercial chemical product or a manufacturing chemical intermediate, becomes a waste, it must be managed according to Federal and/or State hazardous waste regulations. Also defined as a hazardous waste is any residue, contaminated soil, water, or other debris resulting from the cleanup of a spill, into water or on dry land, of this waste. Generators of small quantities of this waste may qualify for partial exclusion from hazardous waste regulations (40 CFR 261.5). F003; When methanol is a spent solvent, it is classified as a hazardous waste from a nonspecific source (F003), as stated in 40 CFR 261.31, and must be managed according to State and/or Federal hazardous waste regulations.
FIFRA Requirements: Residues of methanol are exempted from the requirement of a tolerance when used as a solvent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. Residues of methanol are exempted from the requirement of a tolerance when used as a synergist in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. Residues of methanol are exempted from the requirement of a tolerance when used as a solvent, cosolvent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. As the federal pesticide law FIFRA directs, EPA is conducting a comprehensive review of older pesticides to consider their health and environmental effects and make decisions about their continued use. Under this pesticide reregistration program, EPA examines newer health and safety data for pesticide active ingredients initially registered before November 1, 1984, and determines whether the use of the pesticide does not pose unreasonable risk in accordance to newer safety standards, such as those described in the Food Quality Protection Act of 1996. Pesticides for which EPA had not issued Registration Standards prior to the effective date of FIFRA '88 were divided into three lists based upon their potential for human exposure and other factors, with List B containing pesticides of greater concern than those on List C, and with List C containing pesticides of greater concern than those on List D. Methyl alcohol is found on List D. Case No: 4003; Pesticide type: insecticide, fungicide, herbicide, antimicrobial; Case Status: RED Approved 3/95; OPP has made a decision that some/all uses of the pesticide are eligible for reregistration, as reflected in a Reregistration Eligibility Decision (RED) document .; Active ingredient (AI): methyl alcohol; AI Status: The active ingredient is no longer contained in any registered products. Thus, we characterize it as "cancelled."
FDA Requirements: Methyl alcohol is an indirect food additive for use only as a component of adhesives. Methyl alcohol may be present in the following foods under the conditions specified: (a) In spice oleoresins as a residue from the extraction of spice, at a level not to exceed 50 parts per million. (b) In hops extract as a residue from the extraction of hops, at a level not to exceed 2.2 percent by weight; Provided, that: (1) The hops extract is added to the wort before or during cooking in the manufacture of beer. (2) The label of the hops extract specifies the presence of methyl alcohol and provides for the use of the hops extract only as prescribed by paragraph (b)(1) of this section.
The State of California considers methanol to be a reproductive toxin. However, according to HSDB (Hazardous Substances Database), methanol exposure by inhalation (in rodents) required to cause reproductive toxicity is very high; 5 to 50 times the TLV, well above highly irritating, and not relevant to expected industrial exposure. Reproductive toxicity in rodents is also seen after the administration of methanol directly into the stomach. This mode of administration is analogous to “substance abuse” and cannot be considered relevant to industrial exposure. It is therefore unrealistic to classify methanol as a reproductive effector for GHS, either by ingestion or inhalation

15. OTHER INFORMATION

NFPA RATING	Health	1	Flammability	3	Instability	0

Prepared for *Megaloid Laboratories Limited* **by** *Richard Koscher*
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Key to Abbreviations	**ACGIH®** = American Conference of Governmental Industrial Hygienists **AIHA®** = AIHA® Guideline Foundation HSDB® = Hazardous Substances Data Bank **IARC** = International Agency for Research on Cancer **NIOSH** = National Institute for Occupational Safety and Health **NTP** = National Toxicology Program **OSHA** = US Occupational Safety and Health Administration **RTECS®** = Registry of Toxic Effects of Chemical Substances
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). HSDB® database. US National Library of Medicine. Available from Canadian Centre for Occupational Health and Safety (CCOHS). NIOSH Pocket Guide database. National Institute for Occupational Safety and Health. Available from Canadian Centre for Occupational Health and Safety (CCOHS). Registry of Toxic Effects of Chemical Substances (RTECS®) database. Dassault Systèmes/BIOVIA ("BIOVIA"). Available from Canadian Centre for Occupational Health and Safety (CCOHS).
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