

METHANOL

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: METHANOL

Number: 00000000000011930

Chemical characterization: Aliphatic alcohols

CAS-No.: 67-56-1

Chemical Name: Methyl alcohol

Synonyms: Wood Alcohol

Company Address

LyondellBasell Acetyls, LLC
 One Houston Center, Suite 700
 1221 McKinney St.
 P.O. Box 2583
 Houston Texas 77252-2583

Company Telephone

Customer Service 888 777-0232
 Product Safety 800 700-0946
 product.safety@lyondellbasell.com

Emergency telephone

CHEMTREC USA 800-424-9300
 LYONDELL 800-245-4532

2. HAZARDS IDENTIFICATION

Emergency Overview

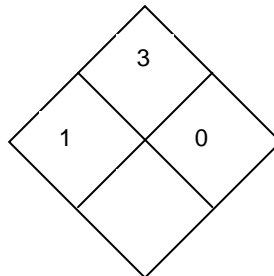
Signal Word

DANGER.

Hazards

Highly flammable. May burn with invisible flame. Moderate eye irritant. Moderate skin irritant. Skin absorption hazard. CNS depressant.

NFPA®



HMIS®

Health	1
Flammability	3
Physical Hazard	0

Physical state

liquid

Color

Clear, colorless.

Odor

Faint, alcohol odor.

Odor Threshold

METHANOL

Odor Threshold

160 ppm / Odor is not an adequate warning of potentially hazardous ambient air concentrations.

Potential health effects

Routes of exposure

Eye. Inhalation. Skin. Ingestion.

Acute effects

See component summary.

- *Methyl alcohol 67-56-1*

May cause irritation to eyes, skin, and respiratory system. May cause drowsiness and dizziness. If ingested or inhaled, methanol may cause metabolic acidosis, blindness or death. Skin absorption of methanol may add significantly to the overall toxic effect.

Skin

Exposure to this material can result in absorption through skin causing a significant health hazard. May be mildly irritating to the skin.

Inhalation

Irritating to the respiratory system. May cause drowsiness and dizziness.

Eyes

May cause moderate irritation, including burning sensation, tearing, redness or swelling.

Ingestion

Swallowing as little as 1 to 2 ounces/25 to 50 grams of Methanol can result in metabolic acidosis leading to optic nerve damage ranging from diminished visual capacity to complete blindness, and death.

Chronic effects

See component summary.

- *Methyl alcohol 67-56-1*

Methanol is slowly eliminated from the body, therefore it can have cumulative toxicity effects with repeated exposures.

Aggravated Medical Condition

Persons with existing skin, kidney, liver or eye disorders may be at increased risk when exposed to methanol.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS-No.</u>	<u>EC-No.</u>	<u>Weight %</u>
Methyl alcohol	67-56-1	200-659-6	> 99.0

Typical composition

4. FIRST AID MEASURES

General advice

METHANOL

General advice

Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. For specific information refer to the Emergency Overview in Section 2 of this MSDS. Prolonged observation may be indicated. Side effect onset may be delayed.

Skin

Take off contaminated clothing and wash before reuse. Clothing that has become saturated with the product must be removed immediately because the product is absorbed through the skin. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first. Seek medical attention if ill effect or irritation develops.

Inhalation

If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Prompt action is essential. Obtain emergency medical attention.

Eyes

In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention.

Ingestion

If swallowed, DO NOT INDUCE VOMITING. Obtain emergency medical attention. Prompt action is essential.

Notes to physician

If patient is comatose, post ictal, has a decreased level of consciousness, or depressed/absent gag reflex, perform gastric lavage. Onset of symptoms may be delayed for 18-24 hours; treatment prior to onset of obvious symptoms may be life-saving. Methanol is rapidly absorbed and emesis should be initiated early to be effective. Administration of an aqueous slurry of activated charcoal with magnesium citrate or sorbitol as a cathartic has been reported helpful. Ethanol inhibits the formation of toxic metabolites. If Ethanol therapy is indicated (CNS depression should be considered), administer a loading dose of 7.6-10 ml of 10% Ethanol in D5W over 30-60 minutes. Maintenance dose is 1.4 ml/kg/hr of 10% Ethanol, to achieve a 100-130 mg/dl blood Ethanol level during Ethanol therapy (if charcoal is administered, Ethanol should be administered intravenously and not orally). Prolonged observation may be indicated.

5. FIRE-FIGHTING MEASURES

Flammable properties**Classification**

OSHA/NFPA Class IB Flammable Liquid.

Flash point

~ 10 °C (50 °F) (Closed Cup)

Autoignition temperature

~ 385 °C (725 °F)

Lower explosion limit

~ 6 vol%

Upper explosion limit

~ 36.5 vol%

Extinguishing Media**Suitable extinguishing media**

SMALL FIRE: Use dry chemicals, CO₂, water spray or alcohol-resistant foam. LARGE FIRE: Use water spray, water fog or alcohol-resistant foam.

Unsuitable extinguishing media

Do not use solid water stream.

METHANOL

Protective equipment and precautions for firefighters

Protective equipment and precautions for firefighters

Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Structural firefighters protective clothing will only provide limited protection.

Precautions for fire-fighting

Methanol is TOXIC. Avoid all exposure, especially ingestion. Vapors may travel long distances along the ground before reaching a source of ignition and flashing back. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Mixtures with water and as little as 21% (by vol) methanol are still flammable (flash point less than 104°F). A methanol fire may not be visible to the naked eye. Under some circumstances, may corrode certain metals, including aluminum and zinc, and generate hydrogen gas. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. Dike fire control water for later disposal; do not scatter material. 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. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Hazardous combustion products

Incomplete combustion may produce carbon monoxide, formaldehydes, and other toxic gases.

6. ACCIDENTAL RELEASE MEASURES

Spills and leaks

Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Eliminate all sources of ignition. All equipment used when handling this product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors.

7. HANDLING AND STORAGE

Handling

Do not handle near heat, sparks, or flame. Avoid contact with incompatible agents. Use only with adequate ventilation/personal protection. Avoid contact with eyes, skin and clothing. Do not enter storage area unless adequately ventilated. Metal containers involved in the transfer of this material should be grounded and bonded.

Storage

Do not store in aluminum, zinc (galvanized) or other corrodible containers. Carbon steel is satisfactory material of construction. Store only in tightly closed, properly vented containers away from heat, sparks, open flame and strong oxidizing agents. Store closed drums with bung in up position. Blanket storage with dry inert gas. Will absorb atmospheric moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

General room or local exhaust ventilation is usually required to meet exposure limit(s).

Personal protective equipment

Inhalation

Do not use air-purifying respirators. If exposure can exceed the exposure limit(s), use only approved self-contained or supplied air respirator operated in a positive pressure mode.

METHANOL

Skin

When skin contact is possible, protective clothing including gloves, apron, sleeves, boots, head and face protection should be worn. The equipment must be cleaned thoroughly after each use.

Eyes

Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Chemical splash goggles and/or face shield should be worn.

Remarks

Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Clothing that has become saturated with the product must be removed immediately because the product is absorbed through the skin. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Wash clothing frequently.

Occupational Exposure Limits

Component	Source	Type:	Value	Note
Methyl alcohol	US (ACGIH)	STEL	250 ppm	None.
	US (ACGIH)	TWA	200 ppm	None.
	US (OSHA)	TWA	200 ppm 260 mg/m3	None.
	NIOSH	IDLH	6,000 ppm	None.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: liquid Clear, colorless.

Odor: Faint, alcohol odor.

Odor Threshold: 160 ppm Odor is not an adequate warning of potentially hazardous ambient air concentrations.

pH: Not applicable.

Boiling point/boiling range: ~ 64 °C (147.2 °F) @ 760 mm Hg

Melting/freezing point: ~ -98 °C (-144.4 °F)

Flash point: ~ 10 °C (50 °F) (Closed Cup)

Autoignition temperature: ~ 385 °C (725 °F)

Flammability: OSHA/NFPA Class IB Flammable Liquid.

Lower explosion limit: ~ 6 vol%

Upper explosion limit: ~ 36.5 vol%

METHANOL

Explosive properties: No Data Available.

Oxidizing properties: No Data Available.

Vapor pressure: ~ 96 mm Hg @ 20 °C (68 °F)

Evaporation rate: 2.1 (butyl acetate = 1)

Relative density: 0.81 @ 0 °C (32 °F) (Water = 1)

Relative vapor density: ~ 1.1 @ 15 - 20 °C (59 - 68 °F)(Air = 1.0)

Viscosity: No Data Available.

Water solubility: Complete (In All Proportions).

Partition coefficient: n-octanol/water: Log Pow = -0.82 to -0.66

Other physico-chemical properties: Additional properties may be listed in Sections 2 and 5.

10. STABILITY AND REACTIVITY

Chemical stability

No additional information available.

Conditions to avoid

Heat, sparks, open flame, other ignition sources, and oxidizing conditions.

Materials to avoid

Strong oxidizing agents. Coatings. Rubber. Certain forms of plastics. Aluminum metals. Zinc. Any reactive metal which will displace hydrogen.

Hazardous decomposition products

Partial oxidation of methanol can lead to the formation of formaldehyde carbon monoxide, and formic acid.

Hazardous polymerization

Not expected to occur.

Reactions with Air and Water

Not expected to occur.

11. TOXICOLOGICAL INFORMATION

Product information

Product Summary

See component summary.

COMPONENT INFORMATION

METHANOL

- *Methyl alcohol* 67-56-1

Acute toxicity

<u>LC50 (Inhl)</u>	rat	64,000 MG/KG	4 HOURS
<u>LD50 (Oral)</u>	rat	5,628 MG/KG BWT	
<u>LD50 (Skin)</u>	rabbit	15,800 MG/KG BWT	

Acute effects

Inhalation

Inhalation of methanol is the major route of exposure in the occupational environment causing toxicity.

Ingestion

Swallowing as little as 1 to 2 ounces/25 to 50 ml. of methanol has been reported to cause death or serious irreversible injury such as blindness in humans. Studies in experimental animals indicate that the metabolism of methanol to formic acid results in metabolic acidosis and reversible or irreversible damage to the optic nerve. One article has reported effects of exposure to methanol vapors (Am. Ind. Hyg. Assoc. J 45(1):57-55, 1984). In this report teachers' aides exposed to methanol vapors (365-3080 ppm) in direct-process spirit duplicating operations reported significantly more of the following complaints than a comparison group: blurred vision, headache, dizziness, and nausea.

Irritation

Skin

Methanol is a skin irritant. Absorption of methanol through the skin may add significantly to the overall toxic effect. Standard Draize skin test (rabbit) - Dose: 20 mg/24 hrs Reaction: Moderate

Eyes

Direct contact of methanol with the eye produces a mild, reversible irritation, assuming treatment is initiated promptly. Transient visual abnormalities that develop during acute methanol intoxication may include blurred or double vision, changes in color preception, constricted visual fields, spots before the eyes, and sharply reduced visual acuity. Methanol ingestion or inhalation can lead to visual disturbance that can proceed to blindness. As little as 4 ml. of methanol has caused blindness in humans. Standard Draize eye test (rabbit) - Dose: 40 mg Reaction: Moderate Dose: 100 mg/24 hrs Reaction: Moderate

Target Organs

Damages the optic nerve.

Reproductive effects

Methanol subchronic inhalation studies with laboratory animals (conducted at approximately 30% of the LC50) has shown specific abnormalities to the cardiovascular, musculoskeletal and urogenital systems of the developing fetus. Reported effects also included fetotoxicity.

12. ECOLOGICAL INFORMATION

Product information

Ecotoxicity

This material is expected to be non-hazardous to aquatic species.

Acute Fish toxicity

LC50 / 96 HOURS Lepomis macrochirus 15,400 mg/l

LC50 / 96 HOURS fathead minnow 29,400 mg/l

METHANOL

Acute toxicity to aquatic invertebrates
 LC50 / 96 HOURS flatworm. 100 mg/l

EC50 / 48 HOURS daphnia > 10,000 mg/l

Environmental fate and pathways

This material is volatile and water soluble. It may enter soil and water. This material is likely to evaporate from soil and water. It is not expected to adsorb onto soils or sediments.

Persistence and degradability

Biodegradation: This material is expected to be readily biodegradable. There is evidence that it is degraded under anaerobic conditions.

Bioaccumulation: Bioconcentration factor (BCF) 0.2 This material is not expected to bioaccumulate.

COMPONENT INFORMATION

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13. DISPOSAL CONSIDERATIONS

14. TRANSPORT INFORMATION

Special Provisions

METHANOL

If you reformulate or further process this material, you should consider re-evaluation of the regulatory status of the components listed in the composition section of this sheet, based on final composition of your product. The DOT shipping description and classification offered in this document for this material assumes the presence of a hazardous substance, by definition, in a vessel in an amount equal to or in excess of a reportable quantity. Shippers should determine the appropriateness of the DOT information offered in this document based on shipping container capacity. Additional requirements may apply. See 49 CFR.

Proper shipping name Methanol
Reportable quantity Methanol
ID No. UN1230
Hazard class 3
Packing group II

15. REGULATORY INFORMATION

Notification status

All ingredients are on the following inventories or are exempted from listing

Country	Notification
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS/ISHL
Korea	ECL
Philippines	PICCS
United States of America	TSCA

All components of this product are listed or are exempt from listing on the TSCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

SARA 302/304

<u>Component</u>	<u>TPQ</u>	<u>RQ</u>
Methyl alcohol		5000 lbs

SARA 311/312

Based upon available information, this material is classified as the following health and/or physical hazards according to Section 311 & 312:

Immediate (Acute) Health Hazard.
 Fire Hazard.

SARA 313

This product contains the following chemicals subject to the reporting requirements of SARA Title III, Section 313 and 40 CFR 372:

<u>Component</u>	<u>Reporting Threshold</u>
Methyl alcohol	1.0%

State Reporting

This product contains no known chemicals regulated by California's Proposition 65.

METHANOL

This product contains the following chemicals regulated by New Jersey's Worker and Community Right to Know Act:

67-56-1 Methyl alcohol

This product contains the following chemicals regulated by Massachusetts' Right to Know Law:

67-56-1 Methyl alcohol

This product contains the following chemicals regulated by Pennsylvania's Right to Know Act:

67-56-1 Methyl alcohol

16. OTHER INFORMATION

Material safety datasheet sections which have been updated:

Last revision: Administrative data clean up. November 3 2010

Disclaimer

This document is generated for the purpose of distributing health, safety, and environmental data. Information is correct to the best of our knowledge at the date of the MSDS publication. It is not a specification sheet nor should any displayed data be construed as a specification. The information on this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this MSDS information may not be applicable.

Numerical Data Presentation

The presentation of numerical data, such as that used for physical and chemical properties and toxicological values, is expressed using a comma (,) to separate digits into groups of three and a period (.) as the decimal marker. For example, 1,234.56 mg/kg = 1 234,56 mg/kg.

Language Translations

This document may be available in languages other than English.

End of Material Safety Data Sheet