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## Methanol (MeOH)

The Global Product Strategy (GPS) Safety Summary gives an overview of information on chemical products in the framework of the International Council of Chemicals Association (ICCA) initiative and is focused on the products' basic characteristics related to safe use. All the information for health, safety and environment for this specific product can be found in the extended Safety Data Sheet (e- SDS) provided by Hellenic Petroleum SA to its customers.

### GENERAL INFORMATION

Methanol (also known as methyl alcohol) is a colorless, highly flammable liquid that can react vigorously with oxidizing materials. The database for the toxic and eco toxic effects of methanol is extensive, allowing a reliable evaluation of its hazard properties. If the recommendations under the section below "Risk Management Measures" are applied, the substance can be handled safely.

### CHEMICAL IDENTITY

Name	Methanol
Trade name	Methanol
IUPAC Name	Methanol
CAS Number	67-56-1
EC Number	200-659-6
Molecular formula	CH <sub>3</sub> OH

### USES AND APPLICATIONS

The main use of the methanol is in the production of Methyl Tertiary Butyl Ether (MTBE), a gasoline additive. Companies also use methanol to produce other chemicals. Other uses include the industrial/professional use of methanol as fuel, in cleaning agents and as a laboratory reagent and also the consumer uses in cleaning agents & de-icers, fuel use indoors (domestic use) and outdoors (gasoline additive).

### PHYSICAL AND CHEMICAL PROPERTIES

Methanol has a characteristic pungent odor, evaporates when exposed to air and is completely miscible in water. Based on its boiling point and flash point, methanol is classified as highly flammable liquid according to the Globally Harmonized System (GHS) for the classification and labeling of chemicals.

Property	Value
Physical State	Liquid
Color	Colorless
Odour	Characteristic
Density	0,79g/cm <sup>3</sup> (20 <sup>0</sup> C)
Boiling point	64,7 <sup>0</sup> C
Flash point	9,7 <sup>0</sup> C
Explosive properties	No explosive properties
Self-ignition temperature	455 <sup>0</sup> C
Vapor pressure	130hPa (20 <sup>0</sup> C)
Water solubility	soluble in water at 20°C
Viscosity (kinematic)	0,544-0.590 mPa s at 25 <sup>0</sup> C
Octanol-Water partition coefficient (logKow)	-0,77

### HEALTH EFFECTS

#### Human health hazard assessment

The human health toxicological hazards of methanol indicate acute toxicity by the oral, dermal and inhalation routes of exposure and capability of inducing serious irreversible effects upon single exposure by inhalation and oral route. Not considered as irritant to skin and eyes. High concentration of methanol vapors may be irritating to mucous membranes. The substance is readily absorbed after inhalation, ingestion and dermal contact and distributed rapidly throughout the body. The table below gives an overview of the health effects assessment results for methanol.

Effect Assessment	Result
Acute toxicity Oral/Inhalation/dermal	Acutely toxic if swallowed, in contact with skin, if inhaled. Serious effects upon single exposure.
Irritation/corrosion Skin/eye/respiratory tract	Not considered as irritant to skin and eyes. High concentration of vapors may be irritating
Sensitization	Negative
Toxicity after repeated exposure Oral/dermal/inhalation	Not clear evidence from the experimental animal studies
Genotoxicity/mutagenicity	Negative
Carcinogenicity	Not considered to be a human cancer concern
Toxic for reproduction	No adverse effects on fertility and not selectively toxic to the fetus.

## ENVIRONMENTAL EFFECTS

Methanol is readily biodegradable in water, soil and sediments both under aerobic and anaerobic conditions. Based on the results of acute and chronic studies, methanol was found with high probability not harmful to aquatic life. Effects due to environmental exposure are unlikely unless it is released in large quantities through spillages. The table below gives an overview of the environmental assessment results for methanol.

Effect Assessment	Result
Aquatic Toxicity	Not harmful to water organisms
Fate and behavior	Result
Biodegradation	Readily biodegradable in aerobic and anaerobic environment
Bioaccumulation potential	Not bio-accumulative
PBT/vPvB conclusion	Neither considered to be PBT nor vPvB

## EXPOSURE

### Human health

**Worker:** Exposure can occur in a manufacturing or formulation facility, during storage, transport and delivery of methanol. Occasional exposure for all identified uses of methanol as such or in a mixture is controlled when used in closed processes.

**Consumer:** Exposure to consumers can occur resulting from the fuel use of methanol and the use as cleaning agent/de-icer. However, consumers are not expected to come into contact with harmful levels of methanol, as the substance is only used at low concentrations.

### Environment

Exposure to the environment may take place during manufacturing, transport, formulation and storage and during professional and consumer use operations. Methanol by itself is not likely to cause environmental harm at levels normally found in the environment. Methanol can contribute to the formation of photochemical smog when it reacts with other volatile organic substances in air.

## RISK MANAGEMENT MEASURES

For the detailed Risk Management Measures (RMMs) please consult the extended Safety Data Sheet of this product






### Industry use, production and formulation

Methanol should only be handled by knowledgeable and trained personnel. Make sure that there is adequate ventilation at workplace. Do not eat, drink or smoke where methanol is handled or stored. Floating roof tanks must be used to control methanol vapor emissions. Industry best practices make use of mild steel piping with welded flanges and methanol compatible gaskets. In cases where engineering controls cannot maintain airborne substance concentrations below exposure limits or in cases with a risk of accidental exposure, use a complete overall protecting against chemicals and respirator.




**Consumer use**  
 Adult consumer use only. General public may be exposed to low amounts of methanol by touching or breathing it in from certain consumer items (varnishes, paints, windshield washer fluid, antifreeze, tobacco smoke and adhesives). When used as fuel or cleaning agent protective gloves and local exhaust ventilation are recommended.

**Environment**  
 Prevent entry into waterways or sewers. Comply with national legislation for the disposal.

**PERSONAL PROTECTIVE EQUIPMENT AND EMERGENCY MEASURES**

		<ul style="list-style-type: none"> <li>➤ For short term exposure: respirator with organic vapor cartridge</li> <li>➤ For long term exposure: full face respirator</li> </ul>
		<ul style="list-style-type: none"> <li>➤ Protective gloves</li> <li>➤ Flame retardant protective overall</li> </ul>
		<ul style="list-style-type: none"> <li>➤ Safety glasses skintight</li> </ul>
<b>First aid measures</b>		<ul style="list-style-type: none"> <li>➤ Implement emergency response procedures. Wash affected skin and eyes with plenty of water. Contaminated clothing should be removed. In case of breathing difficulties, have the casualty inhale oxygen. Call a poison center or a doctor.</li> </ul>
<b>Firefighting measures</b>		<ul style="list-style-type: none"> <li>➤ Small fire: carbon dioxide, dry chemicals, water spray, extinguishing powder</li> <li>➤ Large fire: foam or water spray.</li> </ul>
<b>Accidental release measures</b>		<ul style="list-style-type: none"> <li>➤ For containment: Absorb or cover with dry earth or sand, transfer to containers</li> <li>➤ For clean up: Use antistatic equipment. Fluorocarbon water foam can be applied to the spill to diminish vapor and fire hazard.</li> </ul>

**CLASSIFICATION AND LABELLING**

EU-GHS Criteria (European Regulation, CLP No1272/2008)	Methanol (MeOH)
Pictograms	  
Signal word	GHS02    GHS06    GHS08 Danger
Hazard class and category code	Flam.Liq.2; H225 ,Acute Tox.3; H301-H311-H331 STOT Single Exp.1 ; H370 (C≥10%)
Hazard statement code	H225 Highly flammable liquid and vapor H301 Toxic if swallowed H331 Toxic in contact with skin H311 Toxic if inhaled H370 Caused damage to optic nerve, central nervous system (route of exposure: oral, inhalation)
Precautionary statements	<i>Prevention</i> P210 Keep away from heat/sparks/open flames/hot surfaces-No smoking P280 Wear protective gloves/protective clothing/eye protection/face protection <i>Response</i> P307+P311 IF exposed: Call a POISON CENTER or doctor/physician P370+P378 In case of fire, use carbon dioxide, dry powder or water spray for extinction.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

*Storage*

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

#### BASIC TRANSPORT INFORMATION

UN Number :1230

#### STATE AGENCY REVIEW

- European Regulation EU-GHS No. 1272/2008, Index-No. 603-001-00-X.
- European Regulation No793/93 (risk assessment)
- The substance has been registered under REACH Regulation No 1907/2008
- International Chemical Safety Cards (ICSC)

#### CONCLUSIONS

- Methanol's main use is in the production of chemicals.
- Methanol is a highly flammable liquid, is classified as acutely toxic by oral, dermal and inhalative exposure and as capable of inducing serious irreversible effects upon single exposure (Target organs: optic nerve, central nervous system) .
- The toxicity of methanol to aquatic and terrestrial organisms is very low.
- By applying the appropriate Risk Management Measures, the methanol concentrations to be expected at workplaces and to the general public/consumer are below recommended exposure limits.

#### CONTACT INFORMATION

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- For more information on the GPS Safety Summaries follow the link :  
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

#### ABBREVIATIONS

ICCA :International Council of Chemical Associations

GPS: Global Product Strategy

GHS: Globally Harmonized System

CLP: Classification, Labelling, Packaging

REACH: Registration, Evaluation, Authorisation of Chemicals

PBT/vPvB: Persistent, Bio accumulative and Toxic/very Persistent and very Bio accumulative

UN: United Nations

#### DISCLAIMER

All information and recommendations provided in this GPS Safety Summary, only concern the specific product as described above, and may not apply for the same material if used in combination with any other material or in any process. They are provided in good faith as recommendations only, and are based on data which Hellenic Petroleum SA has available on the above date. They do not supersede or replace required documents by National or European Legislation. However, Hellenic Petroleum SA cannot guarantee their accuracy and validity and accepts no responsibility for any damage or loss that might arise in connection with the use of this material.