

MATERIAL SAFETY DATA SHEET



(According to GHS rev. 5)




METANOL

1.IDENTIFICATION

Company: YPF S.A. Address: Av. Macacha Güemes n° 515 CP C1106BKK Buenos Aires - ARGENTINA Tel# (+ 5411) 5441-2000 Fax# (+ 5411) 5441-5796	Commercial name: METHANOL Chemical name: Methanol.
	Synonyms: Methyl alcohol. Monohydroxymethane. Methyl hydroxide. Carbinol. Wood alcohol.
	Emergency Telephone: Argentina: 0800-222-2933 Other countries: (+5411) 5199 1409

2.HAZARD IDENTIFICATION

2.1 LABEL ELEMENTS

Pictograms			
Warning word	Peligro		
Hazard statement	Highly flammable liquid and vapour.	Toxic if swallowed. Toxic in contact with skin. Toxic if inhaled.	Causes damage to organs.
Classification criteria	Flammable liquid (Category 2)	Acute toxicity - oral (Category 3) Acute toxicity - dermal (Category 3) Acute toxicity - inhalation (Category 3)	Specific target organ toxicity - single exposure (Category 1)
Other regulations	-		

OTHER HAZARDS

Highly flammable liquid.
 When heated, it emits toxic and irritant fumes.
 Vapours form explosive mixtures with air.
 Vapours may travel to source of ignition and flash back.

3.COMPOSITION/INFORMATION ON INGREDIENTS

General composition: Methanol. May contains denatonium benzoate as a denaturant.

Main components	Range %	Classification	S Phrases
Methanol	100	Flam. Liq. 2; Acute Tox. 3; STOT SE 1	H225; H331; H311; H301; H370

4. FIRST-AID MEASURES

Inhalation: Move the affected person to fresh air. If breathing is difficult, apply artificial respiration or administer oxygen. Call for medical attention.

Ingestion/Aspiration: If affected person is conscious, give water. Do not induce vomiting. Do not give anything by mouth to an unconscious or convulsing person. Call for medical attention.

Contact skin/eyes: Remove contaminated clothing and shoes. Flush affected areas with plenty of water for at least 20 minutes. Call for medical attention.

General measures: Call for medical attention.

5. FIRE-FIGHTING MEASURES

Extinguishing agents: Antialcohol foam, dry chemical powder, CO₂, water spray.

Non suitable extinguishing agents: WATER SHOULD NEVER BE USED DIRECTLY.

Combustion products: CO₂ and CO (in incomplete combustion), formaldehyde and unburned methanol.

Special measures: Move containers away from fire area. Keep fire-exposed containers cool. In case of massive fire, withdraw from area and let fire burn. Consult and follow existing emergency standard procedures.

Special hazards: Highly flammable liquid. Vapours form explosive mixtures with air. May be ignited by heat, sparks, static electricity or flames. Vapours may travel to ignition sources and flash back. Containers may explode in heat of fire. Vapour explosion hazard indoors, outdoors or in sewers. Runoff to drains or sewers may create fire and explosion hazard.

Protective equipment: Firefighters' protective clothing. At high concentration of vapours and/or fumes, self-contained breathing apparatus will be needed.

6. ACCIDENTAL RELEASE MEASURES

Environmental precautions: Avoid spillages to sewer and drains.

Personal precautions: Avoid contact with liquid and inhalation of vapours from the product.

Cleanup methods: Shut off ignition sources; no sparks, smoking or flames in hazard area. Water spray may reduce vapour. Take up with sand or other non-combustible adsorbent material and place into containers for later disposal.

Personal protection: In presence of vapours use respiratory protective mask. Wear goggles, impervious gloves and other resistant clothing to avoid contact with the product.

7. HANDLING AND STORAGE

Handling:

General precautions: Wear appropriate protective clothing to avoid contact or prolonged inhalation of the vapours. Do not smoke, drink, or eat during handling of product. Eliminate all ignition sources from the areas where the material is handled or used; no sparks, flames, static electricity. Earthed equipment is needed during transfer.

Specific conditions: Good local exhaust ventilation.

Specific Use: Chemical synthesis. Industrial solvent.

Storage:

Temperature and decomposition products: At high temperatures the product decomposes producing toxic and irritant fumes.

Dangerous reactions: Methanol reacts violently with chloroform+ sodium methoxide. It reacts vigorously with oxidizing materials, chloroform+ sodium or potassium hydroxide, $\text{Pb}(\text{ClO}_4)_2$, P_2O_3 , I+ethanol+HgO.

Storage conditions: Properly labelled and sealed containers. Store in cool and well-ventilated areas, away from oxidizers, incompatible materials and ignition sources. No smoking in storage areas.

Incompatible materials: Strong oxidizers. Avoid contact with acetaldehyde, ethylene oxide, isocyanates and active metals.

8.EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection:

Eye protection: Safety goggles or face-shield to avoid splashes.

Respiratory protection: In presence of high concentrations of vapour, use respiratory protective mask.

Skin protection: Gloves and appropriate clothing and shoes.

Other protective equipment: Eyes washers and showers in working area.

General precautions: Local exhaust ventilation. Avoid all ignition sources, high temperatures, sparks, flames and static electricity. Avoid contact with skin or eyes and inhalation of vapours.

Specific hygiene measures: Do not smoke, drink, or eat in areas where the product is handled or stored. Care should be taken to ensure proper skin cleaning by washing thoroughly with soap and water, followed by the application of a skin re-conditioning cream.

Exposure controls: TLV/TWA (ACGIH): 200 ppm (skin)

TLV/STEL (ACGIH): 250 ppm (skin)

IDLH (Immediately Dangerous for Life &Health): 6000 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Liquid.

pH: 7

Colour: Colourless.

Odour: Alcoholic.

Boiling point: 64.5 °C (148.1 °F)

Melting/Freezing point: -97.8 °C (-144°F)

Flash point: 12.2 °C (53.96 °F)

Autoignition temperature: 464 °C (867 °F)

Explosive properties: Lower explosive limit: 6%
Upper explosive limit: 36.5%
Not explosive. According to column 2 of Annex VII of REACH, this study is not required because: in the molecule no chemical groups are associated with explosive properties.

Oxidizing properties:

According to column 2 of Annex XVII of REACH, this study is not necessary because: the substance, its chemical structure is incapable of reacting exothermically with combustible materials.

Vapour pressure: 97.68 mm Hg at 20°C

Density: 0.792 g/cm³ typical at 20 °C

Surface tension: 22.61 mN/m at 20°C

Viscosity:

Vapour density: 1.11 (air: 1)

Partition coefficient (n-octanol/water): log K_{octanol/water}: -0.77

Water solubility: Miscible.

Solubility: Ethanol, ether, benzene, ketones and most organic solvents.

Other data: Molecular weight: 32.04 g/mol

Heat of vaporization: 39.2 KJ/mol

10. STABILITY AND REACTIVITY

Stability: Material stable at room temperature.

Conditions to avoid: High temperatures, flames or sparks. It may be corrosive to lead and aluminium and attack some forms of plastics and rubber.

Materials to avoid: Strong oxidizers. Avoid contact with acetaldehyde, ethylene oxide, isocyanates and active metals.

Hazardous decomposition/combustion products: Thermal decomposition produces toxic and irritant fumes. Combustion product: CO₂ and CO (in incomplete combustion), formaldehyde and unburned methanol.

Polymerizations risk: NP

Conditions to avoid: NP

11. TOXICOLOGICAL INFORMATION

Routes of exposure: Inhalation of vapours and mists. Other ways are skin and eyes contact. Accidental ingestion.

Acute and chronic effects: Toxic by inhalation, in contact with skin and if swallowed. It may cause headache, dizziness, nausea, weakness, blurred vision, blindness, loss of consciousness and even death.

Carcinogenicity:

No information is available on any component of this product, which has levels greater than or equal to 0.1%, classified as a probable, possible or confirmed human carcinogen by the International Agency for Research on Carcinogens.

Reproductive toxicity: No data available.

Medical conditions which increase hazard to exposure: Eyes and dermatological problem. Repeated overexposures may aggravate existing liver or kidney disease.

12. ECOLOGICAL INFORMATION

Pollutant potential:

Persistence and degradability: If released to the atmosphere, it degrades via reaction with photochemically produced hydroxyl radicals with an approximate half-life of 17 days. Physical removal from air by rainfall is possible. If released to water or soil, relatively rapid biodegradation may occur. Leaching in soil may happen, however, biodegradation occurs rapidly enough to diminish the importance of leaching. Evaporation from dry surfaces may take place; however, volatilization from moist soils is not significant.

Mobility/bioaccumulative potential: Its estimated bioconcentration factor is <1, therefore it does not accumulate in living organisms. It is completely miscible in water, and due its octanol/water partition coefficient, is expected to have high mobility in soil. Bioconcentration and adsorption to sediment are not significant.

Ecotoxicological effects: No data available.

13. DISPOSAL CONSIDERATIONS

Disposal methods (surplus): Recycling and recovery of the material when possible.

Waste: Liquids and solids from industrial processes.

Disposal: Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped and scrubber.

Handling: Labelled and sealed containers.

Provisions: Companies that recover, dispose, store, transport or handle waste should comply with local and/or national provisions in force on waste management.

14. TRANSPORT INFORMATION

Special precautions: Transport in properly labelled and sealed containers.

Additional Information:

LAND TRANSPORT:

Proper shipping name :	METHANOL
UN Number :	1230
Hazard class :	3 (6.1)
Hazard identification number :	336
Packing group :	II
Exempt amount :	1L / E2

AIR TRANSPORT (ICAO/IATA) :

Proper shipping name :	METHANOL
UN Number :	1230
Hazard class :	3 (6.1)
Packing group :	II
CRE :	3L
Passenger and cargo aircraft :	Y341/352
Cargo aircraft only :	364

MARITIME TRANSPORT (IMDG/IMO) :

Proper shipping name :	METHANOL
UN Number :	1230
Hazard class :	3 (6.1)
Packing group :	II
Marine pollutant :	NO
Stowage and segregation :	Category B
Ems :	F-E, S-D

15.REGULATORY INFORMATION

CLASIFICACION: LABELLING

Symbols:

Phrases R:

Phrases S:

Other regulations: Methanol is listed in TSCA Inventory (EPA).

16. OTHER INFORMATION

Data Bases consulted

EINECS: European Inventory of Existing Commercial Substances.
TSCA: Toxic Substances Control Act, US Environmental Protection Agency
HSDB: US National Library of Medicine.
RTECS: US Dept. of Health & Human Services

R phrases show in the document:

Legislation consulted:

Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
Dir. 67/548/EEC about classification, labelling and packaging of dangerous substances (including amendments and adaptations in force).
Dir. 1999/45/EC about classification, labelling and packaging of dangerous preparations (including amendments and adaptations in force).
Dir. 91/689/EEC dangerous waste; Dir. 91/156/EEC waste management.
Royal Decree 363/95: Regulation about notification of new substances and classification, packaging and labelling of dangerous substances.
Royal Decree 255/2003: Regulation about classification, packaging and labelling of dangerous preparations.
European Agreement concerning the international carriage of dangerous goods by road (ADR).
Regulation on the international transport of dangerous goods on the railway. (RID)
International maritime code of dangerous goods. (IMDG)
International Air Transport Association (IATA) regulation pertaining to air shipment.

Glossary:

CAS: Chemical Abstract Service	VLA-EC: Valor Límite Ambiental – Exposición Corta
IARC: International Agency for Research on Cancer	LD ₅₀ : Lethal Dose Medium
ACGIH: American Conference of Governmental Industrial Hygienists.	LC ₅₀ : Lethal Concentration Medium
TLV: Threshold Limit Value	EC ₅₀ : Effective Concentration Medium
TWA: Time Weighted Average	IC ₅₀ : Inhibitory Concentration Medium
STEL: Short-term Exposure Level	BOD: Biological Oxygen Demand.
REL: Recommendable Exposure Limit	NP: Not Pertinent
PEL: Permissible Exposure Limit	: Changes from the last revision
INSHT: Instituto Nal. de Seguridad e Higiene en el Trabajo	[1407.060]
VLA-ED: Valor Límite Ambiental – Exposición Diaria	

The information given in this document has been compiled based on the best existing information sources, latest available knowledge and according to the current requirements on classification, packaging and labelling of hazardous substances. It does not imply the information is exhaustive or accurate in all cases. It is the user's responsibility to determine the validity of the information contained in this Material Safety Data Sheet to apply depending on the case.