



MATERIAL SAFETY DATA SHEET

(According to GHS rev. 5)


TOLUENO

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: TOLUENO Chemical name: Methylbenzene.
	Synonyms: Methylbenzene. Methylbenzol. Toluol.
	Emergency Telephone: Argentina: 0800-222-2933 Other countries: (+5411) 4613-1100

2.HAZARD IDENTIFICATION

2.1 LABEL ELEMENTS

Pictograms		{Sección 2 - Símbolos Imágenes 2}	{Sección 2 - Símbolos Imágenes 3}
Warning word			
Hazard statement			
Classification criteria			
Other regulations			

OTHER HAZARDS

Highly flammable and combustible liquid.

3.COMPOSITION/INFORMATION ON INGREDIENTS

General composition: Toluene. High grade of purity.

Main components	Range %	Classification	S Phrases
Toluene	99	F; R11 Repr. Cat. 3; R 63 Xn; R48/20-65 Xi; R38 R67	S(2-)-36/37-46-62

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 urgently.

Ingestion/Aspiration: DO NOT INDUCE VOMITING because of the danger of liquid aspiration into lungs. If conscious, have the victim drink water or milk. Call for medical attention.

Contact skin/eyes: Remove contaminated clothing as soon as possible. Flush the affected areas with soap and water. In contact with eyes, flush with plenty of water for at least 15 minutes. Call for medical attention.

General measures: Call for medical attention.

5. FIRE-FIGHTING MEASURES

Extinguishing agents: Foams, dry chemicals, CO₂ and water spray.

WATER SHOULD NEVER BE USED directly.

Non suitable extinguishing agents: NP

Combustion products: CO₂, H₂O, CO (in incomplete combustion) and toxic/irritant vapours.

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/combustible liquid. May be ignited by heat, sparks, static electricity or flames. Vapour forms explosive mixtures with air. Vapours are heavier than air and may travel to a remote source of ignition and flash back. Empty containers may explode in heat of fire. Vapour explosion hazard indoors and outdoors. Runoff to drains or sewers may create fire and explosion hazard.

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

6. ACCIDENTAL RELEASE MEASURES

Environmental precautions: Avoid spillages to environment due to hazard of physical fouling to shoreline, soils, etc. Prevent entry into sewers and waterways.

Cleanup methods: Small spillages: Take up with non-combustible absorbent materials. Transfer to sealed containers for later disposal. If possible, clean the contaminated ground.

Large spillages: Cover the spill with foam to avoid vapours cloud formation. Dike far ahead of liquid spill and proceed as if were a small spillage.

Personal precautions: Isolate the area. Keep unnecessary people away. Keep out of low confined areas where vapours can accumulate. Eliminate all ignition sources. Avoid electrostatic charges.

Personal protection: Impervious polyvinyl chloride gloves. Safety antistatic footwear. Safety goggles, in case of risk of splashing material to eyes. Self-contained breathing apparatus may be needed at high vapour concentration.

7. HANDLING AND STORAGE

Handling:

General precautions: Wear suitable protective clothing to avoid contact and suitable respiratory protection to avoid inhalation. Safety goggles and gloves are recommended when there is risk of splashing. Keep away from possible ignition sources; avoid sparks, flames, static discharges or smoking where the material is stored, handled or used. Product transfer must be done in earthed, airtight conducts. Use antisparkling equipment and tools.

Specific conditions: Good antisparkling ventilation system. Special procedures during bulk loading, cleaning and maintaining the tanks to avoid vapour exposure. Make sure that tanks have been thoroughly purged before performing any cleaning or maintaining procedure.

Specific Use: Solvent. Manufacture of many industrial products: Benzene, phenol, dyes, contact adhesives, detergents, etc...

Storage:

Temperature and decomposition products: When heated to decomposition, it emits irritating fumes.

Dangerous reactions: Highly flammable/combustible liquid. Explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione; dinitrogen tetroxide; concentrated nitric acid, sulphuric acid + nitric acid; N_2O_4 ; $AgClO_4$; BrF_3 , sulphur dichloride. It forms an explosive mixture with tetranitromethane.

Storage conditions: Keep the product in properly sealed and labelled containers in cool and well-ventilated place. Keep them away from heat and sources of ignition. Keep containers earthed. Keep them away from strong oxidants.

Incompatible materials: Oxidants.

8.EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection:

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

Respiratory protection: Protective mask with organic vapour cartridge. Self contained breathing apparatus at high vapour concentrations.

Skin protection: Impervious gloves resistant to chemical product. Antistatic safety footwear.

Other protective equipment: Showers in the work area.

General precautions: Avoid contact with liquid and inhalation of vapours.

Specific hygiene measures: Soaked clothing should be drenched with water under a shower (because of fire risk) and then removed as soon as possible, keeping away from any source of ignition. Care should be taken to ensure proper skin cleaning by washing thoroughly with soap and water.

Exposure controls: TLV/TWA (ACGIH): 20 ppm (188 mg/m³) (skin)

REL/TWA (NIOSH): 100 ppm (375 mg/m³)

REL/STEL (NIOSH): 150 ppm (560 mg/m³)

IDLH: 500 ppm (Immediately Dangerous for Life and Health)

PEL/TWA (OSHA): 200 ppm

PEL (OSHA): Ceiling 300 ppm

500 ppm max. Peak 10-min.

MAK: 50 ppm

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Brilliant and transparent liquid.

pH: NP

Colour: Colourless.

Odour: Characteristic.

Boiling point: 110 °C (230°F)

Melting/Freezing point: -95°C (-139°F)

Flash point: 4 °C (39.2°F)

Autoignition temperature: 521°C (996°F)

Explosive properties: Lower explosive limit: 1.3%
Upper explosive limit: 7.1%

Oxidizing properties: NP

Vapour pressure: 21.9 mm Hg at 20 °C

Density: 0.8667 g/cm³ at 20 °C

Surface tension: 29 dynes/cm at 25 °C

Viscosity:

Vapour density: 3.14 (air: 1)

Partition coefficient (n-octanol/water): 5

Water solubility: 0.05% vol/vol

Solubility: Petroleum solvents.

Other data: Molecular weight: 92.15 g/mol
Heat of combustion: 9686 Kcal/Kg

10. STABILITY AND REACTIVITY

Stability: Highly flammable and combustible liquid.

Conditions to avoid: Exposure to flames, heat, sparks and static electricity.

Materials to avoid: Strong oxidants.

Hazardous decomposition/combustion products: CO₂, H₂O, CO (in incomplete combustion) and toxic vapours.

Polymerizations risk: NP

Conditions to avoid: NP

11. TOXICOLOGICAL INFORMATION

Routes of exposure: Inhalation is the most important occupational route of exposure. Contact with skin and eyes. Accidental ingestion.

Acute and chronic effects: Possible risk of harm to the unborn child. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Also may cause lung damage if swallowed. Irritating to skin. Respiratory tract and eyes irritation. Vapours may cause drowsiness and dizziness.

Carcinogenicity: IARC classification: **Group 3** (The agent is not classifiable as to its carcinogenicity to humans)

Reproductive toxicity: Substance toxic for reproduction (development) category 3: Possible risk of harm to the unborn child.

Medical conditions which increase hazard to exposure: Respiratory deficiencies and dermatological problems. Avoid the use of epinephrine because of possible cardiac irregularities. Alcohol enhances the toxicity of toluene, because it acts as a competitive inhibitor in its metabolism, increasing toluene blood half-life and delaying its degradation to hippuric acid (degradation metabolite).

12. ECOLOGICAL INFORMATION

Pollutant potential:

Persistence and degradability: If the product is released to soil, it will be lost by evaporation from near surface soil and microbial degradation. When released into water, the product will be lost by both volatilisation to the atmosphere and biodegradation. The half-life will range from days to several weeks. Released to the atmosphere, it degrades moderately rapidly by reaction with hydroxyl radicals. Its half-life ranges from 3 h to somewhat over a day. Toluene is readily degradable. Biological oxygen demand (BOD): 2.15 g O₂/g toluene. Chemical oxygen demand (COD): 2.52 g O₂/g toluene.

Mobility/bioaccumulative potential: Toluene is expected to have high to moderate mobility in soil and therefore may leach to the groundwater. Bioconcentration factor (BCF) data suggests bioconcentration in aquatic organism is low to moderate.

Ecotoxicological effects: The product is dangerous for freshwater and marine organisms, although spilt product is unlikely to remain in water in sufficient quantities to cause aquatic adverse effects, due to its high volatility and low solubility.

13. DISPOSAL CONSIDERATIONS

Disposal methods (surplus): Combustion or incineration. Large quantities may be collected and reclaimed.

Waste:

Disposal: Highly contaminated materials should be incinerated. Less contaminated materials may be acceptable for authorized landfill sites. Consult with authorized environmental regulatory agencies for guidance on acceptable disposal practices.

Handling: Contaminated materials should be regarded as toxic and dangerous waste and have the same risk and need the same precautions as the product. Do not run off the product to sewers. Half-empty containers are as dangerous as full ones.

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: Labelled as flammable liquid.

Additional Information:

LAND TRANSPORT:

Proper shipping name :	TOLUENE
UN Number :	1294
Hazard class :	Class 3. Classification code: F1. Packaging group II
Hazard identification number :	33
Packing group :	
Exempt amount :	

AIR TRANSPORT (ICAO/IATA) :

Proper shipping name :	TOLUENE
UN Number :	1294
Hazard class :	Class 3. Classification code: F1. Packaging group II
Packing group :	
CRE :	
Passenger and cargo aircraft :	
Cargo aircraft only :	

MARITIME TRANSPORT (IMDG/IMO) :

Proper shipping name :	TOLUENE
UN Number :	1294
Hazard class :	Class 3. Classification code: F1. Packaging group II

Packing group :
Marine pollutant :
Stowage and segregation :
Ems :

15. REGULATORY INFORMATION

CLASIFICACION: LABELLING

Symbols: F, Xn

Phrases R:

R11: Highly Flammable.

R38: Irritating to skin.

R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation.

R63: Possible risk of harm to the unborn child.

R65: Harmful: may cause lung damage if swallowed.

R67: Vapours may cause drowsiness and dizziness.

Frases S:

S36/37: Wear suitable protective clothing and gloves.

S46: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

S62: En caso de ingestión no provocar el vómito: acúdase inmediatamente al médico y muéstresele la etiqueta o el envase.

F; R11

Repr. Cat. 3; R 63

Xn; R48/20-65

Xi; R38

R67

Phrases S:

Other regulations:

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

IARC: International Agency for Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists.

TLV: Threshold Limit Value

TWA: Time Weighted Average

STEL: Short-term Exposure Level

REL: Recommendable Exposure Limit

PEL: Permissible Exposure Limit

INSHT: Instituto Nal. de Seguridad e Higiene en el Trabajo

VLA-ED: Valor Límite Ambiental – Exposición Diaria

VLA-EC: Valor Límite Ambiental – Exposición Corta

LD₅₀: Lethal Dose Medium

LC₅₀: Lethal Concentration Medium

EC₅₀: Effective Concentration Medium

IC₅₀: Inhibitory Concentration Medium

BOD: Biological Oxygen Demand.

NP: Not Pertinent

| : Changes from the last revision

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.