



Refining & Chemicals

## GPS Safety Summary - TOLUENE

### SUBSTANCE NAME

TOLUENE

### CHEMICAL IDENTITY

**Name:** TOLUENE

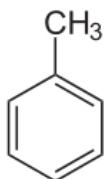
**Chemical name (IUPAC):** TOLUENE

**CAS number:** 108-88-3

**EC number:** 203-625-9

**Molecular formula:** C<sub>7</sub>H<sub>8</sub>

**Structure:**



### USES AND APPLICATIONS

Toluene occurs naturally at low levels in crude oil and is usually produced in refineries in the processes of making gasoline. Toluene is mainly used as a synthesis intermediate product and/or solvent by the chemical industry, in the manufacture of substances. Toluene is used as an octane booster in gasoline, and may be present in some other consumer products (such as coatings, cleaning agents)



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## PHYSICAL/CHEMICAL PROPERTIES

### Phys/Chem Safety Assessment

Property	Value
Physical state (at 20°C)	Liquid
Colour	Colourless
Odour	Aromatic
Density (at 20°C)	866 kg/m <sup>3</sup>
Melting / boiling point	-95°C/110.6°C
Flammability	H225 - Highly flammable liquid and vapour
Explosive properties	Explosion limits (% vol) : upper = 6.7 ; lower = 1.3
Self-ignition temperature	480°C
Vapor pressure (at 20°C)	31hPa at 21.1°C
Mol weight	92 g/mol
Water solubility	573-587 mg/l at 25°C, soluble in organic solvents , fatty substance , mineral oil
Flash point	4.4°C (ASTM D 92)
Octanol-water partition coefficient (LogKow) (at 20°C)	2.73



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## HEALTH EFFECTS

### Human Health Safety Assessment

Effect Assessment	Result
Acute Toxicity	<b>Inhalation</b> : High levels of exposure may cause headache, dizziness, drowsiness, loss of consciousness , coma.
	<b>Ingestion</b> : - High levels of exposure may cause: digestive troubles , diarrhoea and vomiting, neurological disorders.
	<b>Skin Contact</b> : In case of contact with skin, cutaneous penetration may induce a toxic effect
Local effect	<b>Irritating to skin:</b> may cause skin irritation and dermatitis due to the defatting properties of the product
	<b>Irritating to eyes</b> : Contact with the liquid or exposure to vapors may be irritating to eyes
Sensitisation	Not regarded as a sensitiser
Toxicity after repeated exposure	<b>Inhalation</b> : repeated exposure to high concentrations exposure may cause hearing loss, color vision disturbances, neurological disorders.
Genotoxicity / Mutagenicity	Overall, Non-genotoxic
Carcinogenicity	Absence of carcinogenic effects on animals
Reproductive toxicity	No toxic effect on fertility in animals. No toxic effects for foetal development at non-toxic concentrations in mothers (in animal). Lower body weight at birth reported, after deliberate inhalation of high vapor concentrations during pregnancy in human.
Aspiration hazard	In case of accidental swallowing, due to its low viscosity, the product may be aspirated into the lung and induce a chemical pneumonitis developing over a few hours



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## ENVIRONMENTAL EFFECTS

### Environment Safety Assessment

Toluene is not acutely toxic to aquatic organisms. Toluene is insoluble in water and spreads out on the surface of the water, even if a small fraction of the constituents may be dissolved. It is considered readily biodegradable. In the atmosphere, toluene is degraded quickly by photo-oxidation. The potential bioaccumulation of the product in environment is low. The product is not considered to be either persistent and bioaccumulative, nor very persistent and very bioaccumulative.

## EXPOSURE

### Human health

Consumer: Toluene is a natural component of petroleum and the public may be exposed to trace amounts from gasoline and/or city traffic. Consumers may be exposed to toluene as a component of certain products (e.g. cleaning agents, coatings, fuel) Exposure should be below safe exposure levels as operation conditions and risk management measures recommended into the Safety Data Sheet (SDS) must be applied.

Workers: Toluene is mainly used either in closed process with no likelihood of exposure or in closed continuous process with occasional situations where controlled exposure can occur. Workers may be exposed to toluene during, for example, product transfer operations, product sampling, or maintenance/repair activities. Exposure should be below safe exposure levels as operation conditions and management measures recommended into the SDS must be applied.

### Environment

Exposure to the environment may take place, for example, during production of toluene, formulation of coatings or cleaning agents, or when consumer used products containing toluene. Exposure should be below safe exposure levels as operation conditions and management measures recommended into the SDS must be applied.



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## RISK MANAGEMENT RECOMMENDATIONS

Always handle the product in accordance with good industrial hygiene and safety procedures and apply risk management measures recommended into SDS.

Workers must use appropriate Personal protective equipment (PPE) such as gloves, goggles, safety shoes, respiratory protective equipment, etc... especially, during operations where emission may occur, like product transfer operations, product sampling, or maintenance/repair activities. When using the product, avoid producing or diffusing fumes, vapor or spray into the air, avoid splashes, avoid contact with skin and eyes. As the product may form flammable / explosive vapor-air mixture, all possible sources of ignition must be removed. When using, do not eat, drink or smoke. If swallowed, rinse mouth with water, and do not induce vomiting. In case of eye or skin contact, rinse immediately with soap and water and get medical advice.

## STATE AGENCY REVIEW

- This substance has been registered under REACH (EC) 1907/2006.
- This substance has been evaluated under OECD HPV program.

## REGULATORY INFORMATION / CLASSIFICATION AND LABELLING

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according CLP (EC) 1272/2008.

### Classification of the substance

**EC-GHS (CLP)** Classification according to the regulation EC 1272/2008 (EC-GHS) and ATP

Flam. Liq. 2  
Asp. Tox. 1  
Skin Irrit. 2  
STOT SE 3  
Repr. 2  
STOT RE 2



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Pictogram(s) GHS02, GHS07, GHS08



**H Phrase(s)**

H225 - Highly flammable liquid and vapour.

H304 - May be fatal if swallowed and enters airways.

H315 - Causes skin irritation.

H336 - May cause drowsiness or dizziness.

H361d - Suspected of damaging the unborn child

H373 - May cause damage to central nervous system through prolonged or repeated exposure

**P Phrase(s)**

P201 - Obtain special instructions before use.

P210 - Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P243 - Take precautionary measures against static discharge.

P260 - Do not breathe dust/fume/gas/mist/vapors/spray.

P273 - Avoid release to the environment.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P301/310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P331 - Do NOT induce vomiting.

P303/361/353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P309/311 - IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

P403/235 - Store in a well-ventilated place. Keep cool.

## CONCLUSION

- Toluene is mainly used as a solvent and/or chemical reactant by the industry for the manufacture of substances. It may be present in some consumer products (such as fuel, cleaning agents, paints).
- Short high exposure to toluene by inhalation, ingestion, or skin contact may cause toxic effects. The repeated inhalation exposure may cause hearing loss, color vision disturbances, neurological disorders. Cases of lower baby body weight at birth have been reported after deliberate inhalation of high vapor concentrations during pregnancy of their mother.
- Exposure to humans and the environment is considered low if properly handled.

## CONTACT INFORMATION WITHIN COMPANY

For further information on this substance or product safety summaries in general, please contact:  
[pch.reach@total.com](mailto:pch.reach@total.com)

Or visit the ICCA portal on: <http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

## GLOSSARY

Acute Toxicity	Harmful effect resulting from a single or short term exposure to a substance
Biodegradation	Decomposition or breakdown of a substance under natural conditions (actions of micro organisms etc)
Bioaccumulation	Progressive accumulation in living organisms of a chemical substance present in the environment
Carcinogenicity	Substance effects causing cancer
Genotoxicity	Substance effect that causes damage to genes, including Mutagenicity and clastogenicity
GHS	Global Harmonized System of chemicals classification
Hazard	Inherent substance property bearing a threat to health or environment
Mutagenicity	Substance effect that cause mutation on genes
Persistence	Refers to the length of time a compound stays in the environment, once introduced
Reprotoxicity	Including teratogenicity, embryotoxicity and harmful effects on fertility
Sensitising	Allergenic

## DISCLAIMER

The information contained in this paper is intended as basic advice and general information to this designated specific product (substance) only and whilst this information is provided in utmost good faith and has been based on the best information to our belief and to our knowledge currently available, it is to be relied upon at the user's own risk. The information in this paper is not intended to provide medical or medical emergency response information, nor treatment information; all detailed safety and health information is to be found in the Safety Data Sheets (SDS) for the product (substance) concerned and to be consulted before use of this product (substance). The information in this Safety Summary is not replacing the SDS and is not automatically applicable if this product (substance) is used with other products (substances) or in other processes.

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