

According to Regulation (EC) No 1907/2006

According to Regulation (EC) No 2020/878

# Toluene

Version number: 3.0  
Issued: 2025-06-18



## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

**Trade name**

Toluene

**CAS number**

108-88-3

**EC number**

203-625-9

**Index No.**

601-021-00-3

**Synonyms**

Methylbenzene

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Relevant identified uses**

Research and development. Laboratory Chemicals. Manufacture of substances.

**Not suitable for use in**

Not suitable for human consumption or veterinary purposes.

### 1.3. Details of the supplier of the safety data sheet

**Supplier**

Molekula Group

Address

Molekula Ltd,  
Lingfield Way, Darlington,  
County Durham,  
DL1 4XX  
United Kingdom

Telephone

+44 (0) 3302 000 333

Email

info@molekula.com

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## 1.4. Emergency telephone number

### **Poison center/Additional emergency number**

0344 892 0111 (Available 24/7) - National Poisons Information Service (Newcastle Centre) (Available for the public.)

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

#### **Classification**

Flammable liquids, hazard category 2

Skin irritation, hazard category 2

Aspiration hazard, hazard category 1

Specific Target Organ Toxicity — Single exposure, hazard category 3 - narcosis

Specific Target Organ Toxicity — Repeated exposure, hazard category 2

Reproductive toxicity, hazard category 2

Hazardous to the aquatic environment — Chronic hazard category 3

#### **Hazard statements**

H225, H304, H315, H336, H361d, H373, H413

### 2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

#### **Hazard pictograms**



#### **Signal word**

Danger

#### **Hazard statements**

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 organs through prolonged or repeated exposure .

H413 May cause long lasting harmful effects to aquatic life.

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## Precautionary statements

P201 Obtain special instructions before use.

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P273 Avoid release to the environment.

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

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

P302 + P352 IF ON SKIN: Wash with plenty of water/.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P390 Absorb spillage to prevent material damage.

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

P501 Dispose of contents/container to local regulations.

## 2.3. Other hazards

No data available

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification	H-phrases M factor acute M factor chronic	Specific concentration limits	Note
toluene	108-88-3 203-625-9 01-2119471310-51 601-021-00-3	100%	Flam. Liq. 2, Asp. Tox. 1, Skin Irrit. 2, STOT SE 3 - narcosis, Repr. 2, STOT RE 2, Aquatic Chronic 3	H225, H304, H315, H336, H361d, H373, H412 - -	-	-

## Molecular weight

92.14

## Substance additional information

For the complete text of H- / EUH-statements mentioned in this section, see section 16.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

Get medical attention if any discomfort continues. Show this Safety Data Sheet (SDS) to medical personnel.

## Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. In case of persistent throat irritation or coughing: Seek medical attention and bring these instructions.

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## **Skin contact**

IF ON SKIN: Wash with plenty of soap and water. Continue to rinse for at least 15 minutes. Get medical advice/attention if you feel unwell.

## **Eye contact**

Remove contact lenses if present. Rinse eyes with water. Continue to rinse for at least 15 minutes and seek medical attention.

## **Ingestion**

Rinse mouth. Do NOT induce vomiting. Avoid vomiting and normal rinse of stomach because of risk of aspiration. Immediately call a POISON CENTER/doctor.

## **Information for doctors**

No data available.

## **4.2. Most important symptoms and effects, both acute and delayed**

The severity of the symptoms described will vary dependant of the concentration and the length of exposure.

## **4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically. No special treatment requirement.

## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

#### **Suitable extinguishing media**

In case of fire: Use alcohol resistant foam, carbon dioxide, dry powder or water fog to extinguish.

### **5.2. Special hazards arising from the substance or mixture**

Specific hazards: Flammable liquid and vapour.

Development of hazardous combustion gases or vapours possible in the event of fire.

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>).

Containers can burst violently when heated, due to excess pressure build-up.

Vapours are heavier than air and may travel along the floor and in the bottom of containers.

Vapours may form explosive mixture with air at room temperature.

Pay attention to flashback.

### **5.3. Advice for firefighters**

#### **Special protective equipment for fire-fighters**

Evacuate area. Avoid breathing gas, fume, vapours or spray. Prevent skin contact by maintaining a safe distance and by wearing suitable protective equipment/ clothing. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

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## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Avoid inhalation of vapours and spray mist and contact with skin and eyes. For personal protection, see section 8. Provide adequate ventilation. Remove sources of ignition. Beware of the explosion danger. Take action to prevent static discharges.

### 6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Risk of explosion.

### 6.3. Methods and material for containment and cleaning up

Collect with absorbent, non-combustible material into suitable containers. Remove sources of ignition. Beware of the explosion danger. Use spark-proof tools and explosion-proof equipment.

### 6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

#### Preventive handling precautions

For precautions see section 2.2. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take action to prevent static discharges. Use spark-proof tools and explosion-proof equipment. Work under hood. Wear protective clothing, gloves, eye and face protection. Avoid contact with skin and eyes. Avoid ingestion and inhalation.

#### General hygiene

Observe good chemical hygiene practices. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove contaminated clothing and launder thoroughly before re-use. Wash skin thoroughly after handling.

### 7.2. Conditions for safe storage, including any incompatibilities

Store in a dry place. Store in a closed container. Store at ambient temperature.

Storage class : 3: FLAMMABLE LIQUIDS

### 7.3. Specific end use(s)

No specific usage precautions noted.

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## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### DNEL/DMEL

Product/Substance name (CAS No./EC No.)	Type	Exposure	Value	Population	Effects
toluene (108-88-3/203-625-9)	DNEL	Acute (short term) Inhalation	384 mg/m <sup>3</sup>	Workers	Systemic
toluene (108-88-3/203-625-9)	DNEL	Acute (short term) Inhalation	384 mg/m <sup>3</sup>	Workers	Local
toluene (108-88-3/203-625-9)	DNEL	Chronic (long term) Dermal	384 mg/kg bw/day	Workers	Systemic
toluene (108-88-3/203-625-9)	DNEL	Chronic (long term) Inhalation	192 mg/m <sup>3</sup>	Workers	Systemic
toluene (108-88-3/203-625-9)	DNEL	Chronic (long term) Inhalation	192 mg/m <sup>3</sup>	Workers	Local
toluene (108-88-3/203-625-9)	DNEL	Acute (short term) Inhalation	226 mg/m <sup>3</sup>	Consumers	Systemic
toluene (108-88-3/203-625-9)	DNEL	Acute (short term) Inhalation	226 mg/m <sup>3</sup>	Consumers	Local
toluene (108-88-3/203-625-9)	DNEL	Chronic (long term) Dermal	226 mg/kg bw/day	Consumers	Systemic
toluene (108-88-3/203-625-9)	DNEL	Chronic (long term) Inhalation	56.5 mg/m <sup>3</sup>	Consumers	Systemic
toluene (108-88-3/203-625-9)	DNEL	Chronic (long term) Oral	8.13 mg/kg bw/day	Consumers	Systemic

#### PNEC/PEC

Product/Substance name (CAS No./EC No.)	Type	Environmental compartment	Value
toluene (108-88-3/203-625-9)	PNEC	Freshwater	0.68 mg/l
toluene (108-88-3/203-625-9)	PNEC	Marine water	0.68 mg/l
toluene (108-88-3/203-625-9)	PNEC	Sediment (freshwater)	16.39 mg/kg
toluene (108-88-3/203-625-9)	PNEC	Sediment (marine water)	16.39 mg/kg
toluene (108-88-3/203-625-9)	PNEC	Sewage Treatment Plant	13.61 mg/l

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Product/Substance name (CAS No./EC No.)	Type	Environmental compartment	Value
toluene (108-88-3/203-625-9)	PNEC	Intermittent releases	0.68 mg/l

## 8.2. Exposure controls

### Personal Protective Equipment Symbols



### Eye / face protection

Wear eye protection.

### Hand protection

Wear protective gloves.

Recommended gloves: Viton rubber (fluor rubber).

Glove Thickness: 0.7mm

Breakthrough time: 8 hours

Always inspect gloves before use. If signs of wear and tear are noticed then the gloves should be replaced.

No specific hygiene procedures noted, but good personal hygiene practices are always advisable, especially when working with chemicals. Wash contaminated skin thoroughly after handling.

### Other skin protection

Wash skin thoroughly after handling.

### Respiratory protection

Provide adequate ventilation. If ventilation is insufficient, suitable respiratory protection must be provided.

### Environmental exposure controls

Avoid discharge into drains.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

#### Physical state

Liquid

#### Colour

Colourless.

#### Odour

Aromatic.

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## Melting point / freezing point

-95 - -90 °C

## Boiling point or initial boiling point and boiling range

110 - 111 °C

## Flammability

Highly flammable liquid and vapour.

## Lower and upper explosion limit

No data available

## Flash point

4 °C

### **Method**

CC (Closed cup).

## Auto-ignition temperature

535 °C

## Decomposition temperature

No data available

## pH

No data available

## Kinematic viscosity

No data available

## Viscosity, dynamic

0.6 mPa · s

## Solubility

Insoluble in water.

### **Method**

(0.5g/l, 20°C)

## Partition coefficient n-octanol/water

log Pow: 2.73 (20°C)

### **Method**

Bioaccumulation: Is not expected to be bioaccumulable.

## Vapour pressure

29.1 hPa

### **Method**

(20°C)

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## Density and/or relative density

0.865 g/cm<sup>3</sup>

### Method

(25°C)

## Relative vapour density

3.18

## Explosive properties

Vapours may form explosive mixtures with air.

## Particle characteristics

No data available

## 9.2. Other information

No data available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Risk of explosion if heated under confinement.

Vapor/air-mixtures are explosive at intense warming.

### 10.2. Chemical stability

Stable under normal temperature conditions. Stable under the prescribed storage conditions.

### 10.3. Possibility of hazardous reactions

Risk of explosion if heated under confinement.

### 10.4. Conditions to avoid

Heat, sparks, flames.

### 10.5. Incompatible materials

Strong oxidising substances, strong acids and strong bases.

### 10.6. Hazardous decomposition products

See section 5.

## SECTION 11: Toxicological information

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Acute toxicity

Based on available data, the classification criteria are not met.

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Product / Substance name CAS / EC no.	Dose descriptor	Value / Dose	Duration of exposure	Test animals
toluene 108-88-3 / 203-625-9	Acute Toxicity (Oral LD50):	5,580mg/kg	-	Rat
toluene 108-88-3 / 203-625-9	Acute Toxicity (Dermal LD50):	> 5,000mg/kg	-	Rabbit
toluene 108-88-3 / 203-625-9	Acute Toxicity (Inhalation LC50):	25.7 mg/l (vapours)	4 hours	Rat

### Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product / Substance name CAS / EC no.	Result	Duration of exposure	Species
toluene 108-88-3 / 203-625-9	Irritating.	4 hours	Rabbit

### Serious eye damage/irritation

Based on available data, the classification criteria are not met.

Product / Substance name CAS / EC no.	Result	Species
toluene 108-88-3 / 203-625-9	No eye irritation.	Rabbit

### Respiratory or skin sensitisation

Based on available data, the classification criteria are not met.

Product / Substance name CAS / EC no.	Result	Species
toluene 108-88-3 / 203-625-9	Negative.	Guinea Pig

### Germ cell mutagenicity

Based on available data, the classification criteria are not met.

### Carcinogenicity

Based on available data, the classification criteria are not met.

### Reproductive toxicity

Based on available data, the classification criteria are not met.

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Product / Substance name CAS / EC no.	Result	Other
toluene 108-88-3 / 203-625-9	Suspected of damaging the unborn child.	Classification according to Regulation (EC) No. 1272/2008: Annex VI

### **STOT-single exposure**

Based on available data, the classification criteria are not met.

Product / Substance name CAS / EC no.	Species	Method / Guideline
toluene 108-88-3 / 203-625-9	May cause drowsiness or dizziness. - Central nervous system.	Classification according to Regulation (EC) No. 1272/2008: Annex VI

### **STOT-repeated exposure**

Based on available data, the classification criteria are not met.

Product / Substance name CAS / EC no.	Result	Method / Guideline
toluene 108-88-3 / 203-625-9	May cause damage to organs through prolonged or repeated exposure. - Central nervous system.	Classification according to Regulation (EC) No. 1272/2008: Annex VI

### **Aspiration hazard**

Based on available data, the classification criteria are not met.

## 11.2. Information on other hazards

No data available

## SECTION 12: Ecological information

### 12.1. Toxicity

#### **Acute fish toxicity**

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species	Remark
toluene 108-88-3 / 203-625-9	LC50	5.5mg/l	96 hours	Oncorhynchus kisutch	(ECHA)

#### **Acute crustacean toxicity**

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Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species	Remark
toluene 108-88-3 / 203-625-9	EC50	3.78mg/l	48 hours	Ceriodaphnia dubia	(US-EPA)

## 12.2. Persistence and degradability

Product / Substance name CAS / EC no.	Type of test	Result	Exposure route	Degradation
toluene 108-88-3 / 203-625-9	aerobic	The product is readily biodegradable.	20 days	86%

## 12.3. Bioaccumulative potential

Product / Substance name CAS / EC no.	Bioconcentration factor (BCF)	Duration	Result	Species
toluene 108-88-3 / 203-625-9	90	3 days	0.05mg/l	Leuciscus idus (Golden orfe)

## 12.4. Mobility in soil

No data available

## 12.5. Results of PBT and vPvB assessment

No data available

## 12.6. Endocrine disrupting properties

This product does not contain any known or suspected endocrine disruptors.

## 12.7. Other adverse effects

No data available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### **Disposal considerations**

Dispose of contents/container in accordance with local/regional/national/international regulations.

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## SECTION 14: Transport information

### 14.1. UN number

1294

### 14.2. UN proper shipping name

ADR / RID / ADN proper shipping name

TOLUENE

IMDG proper shipping name

TOLUENE

IATA proper shipping name

Toluene

### 14.3. Transport hazard class(es)

Label

ADR/RID/ADN



3

IMDG



3

IATA



3

ADR / RID Class

3

ADR / RID Classification code

F1

ADR / RID hazard identification number

33

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## IMDG Class

3

## IATA Class

3

## ADN Class

3

## ADN Class Code

F1

### 14.4. Packing group

ADR / RID / ADN: II

IMDG: II

IATA: II

### 14.5. Environmental hazards

Not applicable

### 14.6. Special precautions for user

#### Special precautions for user

Tunnel restriction code: D/E

Transport category: 2

#### IMDG EmS

F-E, S-D

### 14.7. Maritime transport in bulk according to IMO instruments

IBC Instruction: IBC02

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### National regulations

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

#### Other regulations, limitations and legal regulations

Directive 94/33/EC - The protection of young people at work.

### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

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## SECTION 16: Other information

### Phrase meaning

Flam. Liq. 2 - Flammable liquids, hazard category 2

Skin Irrit. 2 - Skin irritation, hazard category 2

Asp. Tox. 1 - Aspiration hazard, hazard category 1

STOT SE 3 - narcosis - Specific Target Organ Toxicity — Single exposure, hazard category 3 - narcosis

STOT RE 2 - Specific Target Organ Toxicity — Repeated exposure, hazard category 2

Repr. 2 - Reproductive toxicity, hazard category 2

Aquatic Chronic 3 - Hazardous to the aquatic environment — Chronic hazard category 3

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 organs through prolonged or repeated exposure .

H412 Harmful to aquatic life with long lasting effects.

H413 May cause long lasting harmful effects to aquatic life.