# SAFETY DATA SHEET

## TOLUENE

**CAS No.: 108-88-3**

*This Safety Data Sheet is issued by Suraj Chemicals as the distributor/supplier of record, based on manufacturer and published GHS / regulatory reference data for this substance. Users should also consult the specific manufacturer's SDS where available.*

## 1. IDENTIFICATION

**GHS Product identifier**

TOLUENE
Methylbenzene; Toluol
**CAS:** 108-88-3

**Other means of identification**

Not relevant

**Recommended use of the chemical and restrictions on use**

Relevant uses: Industrial solvent for paints, coatings, adhesives, printing inks, rubber processing; chemical feedstock/intermediate. For industrial user only.
Uses advised against: All uses not specified in this section or in section 7.3.

**Supplier's details**

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**Emergency phone number**

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## 2. HAZARDS IDENTIFICATION

**Classification of the substance or mixture**

**GHS:**
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

| | |
|---|---|
| Flam. Liq. 2 | Flammable liquid, Category 2, H225 |
| Asp. Tox. 1 | Aspiration hazard, Category 1, H304 |
| Skin Irrit. 2 | Skin irritation, Category 2, H315 |
| Repr. 2 | Reproductive toxicity, Category 2, H361d |
| STOT SE 3 | Specific target organ toxicity, single exposure, Category 3, H336 |
| STOT RE 2 | Specific target organ toxicity, repeated exposure, Category 2, H373 (CNS, hearing organs) |
| Aquatic Chronic 2 | Hazardous to the aquatic environment, chronic hazard, Category 2, H411 |

**GHS label elements, including precautionary statements**

**GHS: 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 (central nervous system, hearing organs) through prolonged or repeated exposure.
H411 – Toxic to aquatic life with long lasting effects.

**Precautionary statements**

P201: Obtain special instructions before use.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240: Ground/bond container and receiving equipment.
P260: Do not breathe vapours.
P264: Wash exposed skin thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P273: Avoid release to the environment.
P280: Wear protective gloves/eye protection.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313: IF exposed or concerned: Get medical advice/attention.
P370+P378: In case of fire: Use dry chemical powder, CO2, foam or alcohol-resistant foam to extinguish.
P403+P235: Store in a well-ventilated place. Keep cool.
P501: Dispose of contents/container in accordance with hazardous-waste regulations.

**Other hazards which do not result in classification**

Vapours are heavier than air and may accumulate in low-lying/confined spaces, travelling to a source of ignition and flashing back. Deliberate inhalation abuse (solvent misuse) is a recognised serious health hazard – sale/dispensing should follow relevant national controls.

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

**Substances**

**Chemical description:** Toluene

In accordance with Annex 4.3.3 of the GHS, the product contains:

| Identification | Chemical Name / Classification | Concentration |
|---|---|---|
| CAS: 108-88-3 | Toluene — Flam. Liq. 2: H225; Asp. Tox. 1: H304; Skin Irrit. 2: H315; Repr. 2: H361d; STOT SE 3: H336; STOT RE 2: H373; Aquatic Chronic 2: H411 – Danger | ≥99% |

*To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.*

**Mixtures**

Non-applicable

## 4. FIRST AID MEASURES

**Description of necessary first-aid measures**

Request medical assistance immediately, showing the SDS of this product.

**By inhalation**

Remove the affected person to fresh air immediately and keep at rest in a position comfortable for breathing. Seek medical attention if symptoms persist.

**By skin contact**

Remove contaminated clothing. Wash skin thoroughly with soap and water. Seek medical attention if irritation persists.

**By eye contact**

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention if irritation persists.

**By ingestion/aspiration**

Do NOT induce vomiting – risk of aspiration into the lungs (H304). Rinse mouth. Obtain immediate medical attention.

**Most important symptoms/effects, acute and delayed**

Acute and delayed effects are indicated in sections 2 and 11.

**Indication of immediate medical attention and special treatment needed, if necessary**

Women who are pregnant or planning pregnancy should be made aware of the suspected developmental hazard (H361d) before handling this product. Aspiration into the lungs is a medical emergency.

## 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media**

**Suitable:** Dry chemical powder, carbon dioxide (CO2), alcohol-resistant foam, water spray/fog.
**Unsuitable:** Do not use a solid/jet water stream as this may spread the fire.

**Specific hazards arising from the chemical**

Highly flammable liquid; vapours form explosive mixtures with air and are heavier than air, able to travel to a source of ignition and flash back. Containers may rupture explosively on heating.

**Special protective actions for fire-fighters**

Evacuate all non-essential personnel. Intervention only by capable personnel who are trained and aware of the hazards of the product. In all cases wear self-contained breathing apparatus and full protective clothing.

**Additional provisions**

If safe to do so, remove the exposed containers, or cool with large quantities of water spray from a safe/protected position. Approach from upwind. Contain fire-fighting water for later disposal; it must not enter drains or watercourses.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**For non-emergency personnel**

Eliminate all sources of ignition. Ensure adequate ventilation. Personal protection equipment must be used against potential contact with the spilt product (see section 8). Evacuate the area and keep out those who do not have protection.

**For emergency responders**

Wear protective equipment as per section 8. Keep unprotected persons away.

**Environmental precautions**

Avoid at all cost any type of spillage into an aqueous medium, drains or soil. Contain the product absorbed appropriately in hermetically sealed containers. Notify the relevant authority in case of exposure to the general public or the environment.

**Methods and materials for containment and cleaning up**

Eliminate all ignition sources. Contain spillage with inert absorbent material (sand, earth, vermiculite). Collect into suitable closed containers for disposal. Ventilate the area. Prevent entry into drains/watercourses.

**Reference to other sections**

See sections 8 and 13.

## 7. HANDLING AND STORAGE

**Precautions for safe handling**

**A. General precautions for safe use**

Handle in well-ventilated areas with local exhaust ventilation away from heat, sparks and open flames. Use only non-sparking, explosion-proof equipment. Avoid skin/eye contact and inhalation of vapours.

**B. Technical recommendations for the prevention of fires and explosions**

Bond and ground containers and equipment during transfer to eliminate static discharge. Keep away from strong oxidising agents.

**C. Technical recommendations on general occupational hygiene**

Do not eat, drink or smoke during the process; wash hands and exposed skin afterwards with suitable cleaning products.

**D. Technical recommendations to prevent environmental risks**

Provide bunded/contained storage. Avoid atmospheric emissions and discharge to drains. Follow the protective measures given in the exposure controls/personal protection section.

**Conditions for safe storage, including any incompatibilities**

**A. Specific storage requirements**

| | |
|---|---|
| Minimum Temp. | 5°C |
| Maximum Temp. | 30°C |
| Maximum time | 24 Months (unopened, original container) |

**B. General conditions for storage**

Store in a cool, dry, well-ventilated flammable-liquids store away from heat, direct sunlight and sources of ignition. Keep container tightly closed.

**Specific end use(s)**

Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Control parameters**

Substances whose occupational exposure limits have to be assessed in the workplace, per the Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987):

| Identification | Occupational Exposure Limit Type | Value |
|---|---|---|
| Toluene<br>CAS: 108-88-3 | Time Weighted average concentration (8 hrs) – ACGIH TLV (skin) | 20 ppm / 75 mg/m³ |

**Appropriate engineering controls**

It is recommended to use localized extraction/general ventilation in the work area as a collective protection measure to avoid exceeding occupational exposure limits, in addition to individual protective equipment (PPE) as needed. Consult the manufacturer's information leaflet for storage, use, cleaning and maintenance of PPE.

**B. Respiratory protection**

Where ventilation is inadequate, use a respirator fitted with an organic vapour cartridge; use SCBA for high concentrations/confined space entry.

**C. Specific protection for the hands**

Chemical-resistant gloves (nitrile rubber or Viton®) – note significant dermal absorption potential.

**D. Eye and face protection**

Chemical safety goggles/panoramic glasses against splash/projections. Use if there is a risk of splashing.

**E. Bodily protection**

Flame-retardant/antistatic protective clothing. Safety footwear.

**F. Additional emergency measures**

Emergency shower (ANSI Z358-1, ISO 3864-1:2011, ISO 3864-4:2011) and eyewash stations (DIN 12 899, ISO 3864-1:2011, ISO 3864-4:2011) should be available.

**Environmental exposure controls**

Avoid environmental spillage of both the product and its container. See subsection 7.1.D.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

| | |
|---|---|
| **Appearance** | |
| Physical state at 20°C | Liquid |
| Appearance | Clear, colourless liquid |
| Color | Colourless |
| Odor | Sweet, pungent, characteristic |
| Odour threshold | ~1.6–10 ppm (approx.) |
| **Volatility** | |
| Boiling point at atmospheric pressure | 110.6°C |
| Vapour pressure at 20°C | 2.9 kPa |
| Evaporation rate at 20°C | Slower than n-butyl acetate |
| **Product Description** | |
| Density / Relative density at 20°C | 0.867 g/cm³ |
| Dynamic viscosity at 20°C | 0.59 mPa·s |
| Concentration | ≥99% |
| pH | Not relevant (non-aqueous) |
| Vapour density (air = 1) | 3.14 |
| Partition coefficient n-octanol/water (log Pow) | 2.73 |
| Solubility in water at 20°C | ~0.05 g/100 mL (slightly soluble) |
| Decomposition temperature | Not established |
| Melting point/freezing point | -95°C |
| **Flammability** | |
| Flash Point | 4°C (closed cup) |
| Flammability (solid, gas) | Non-applicable (liquid) |
| Autoignition temperature | 480°C |
| Lower / Upper flammability limit | 1.1% / 7.1% v/v |
| **Particle Characteristics** | |
| Median equivalent diameter | Non-applicable (liquid) |

** Not relevant/not established due to the nature of the product or grade.*

**Other information**

| | |
|---|---|
| Explosive properties | Not classified as explosive |
| Oxidising properties | Not classified as oxidising |
| Corrosive to metals | Not corrosive to metals |
| Heat of combustion | ~40.9 kJ/g |
| Surface tension at 20°C | 28.4 mN/m |
| Refraction index | 1.497 |

## 10. STABILITY AND REACTIVITY

**Reactivity** Stable under normal conditions. Reacts with strong oxidising agents; may attack some plastics/rubbers.

**Chemical stability** Chemically stable under the indicated conditions of storage, handling and use.

**Possibility of hazardous reactions** Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected.

**Conditions to avoid**

| Shock/Friction | Contact with Air | Increase in Temperature | Sunlight | Humidity |
|---|---|---|---|---|
| Not applicable | Vapour/air mixtures explosive within flammable limits | Avoid heat and open flame | Avoid prolonged exposure | No particular hazard |

**Incompatible materials** Strong oxidising agents, strong acids (e.g. concentrated nitric/sulfuric acid mixtures).

**Hazardous decomposition products** Combustion produces carbon monoxide and carbon dioxide.

## 11. TOXICOLOGICAL INFORMATION

**Information on toxicological effects**

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

**A. Ingestion (acute effect)**
May be fatal if swallowed due to aspiration into the lungs (H304). Do not induce vomiting.

**B. Inhalation (acute effect)**
High vapour concentrations cause CNS depression (headache, dizziness, drowsiness, H336, narcotic effect). Chronic overexposure is associated with CNS and hearing-organ effects (H373).

**C. Contact with skin and eyes (acute effect)**
Causes skin irritation (H315); marked defatting with repeated/prolonged contact. Significant dermal absorption is possible.

**D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity)**
Suspected of damaging the unborn child (Repr. 2, H361d) based on animal/human developmental data. Not classified as a carcinogen (IARC Group 3, not classifiable as to carcinogenicity to humans) or as a mutagen based on available data.

**E. Sensitizing effects**
Classification criteria for respiratory or skin sensitisation are not met based on available data.

**F. Specific target organ toxicity (STOT) – single exposure**
May cause drowsiness or dizziness (H336).

**G. Specific target organ toxicity (STOT) – repeated exposure**
H373 – May cause damage to the central nervous system and hearing organs through prolonged or repeated exposure (inhalation) – well-documented occupational/solvent-abuse literature ("toluene encephalopathy").

**H. Aspiration hazard**
H304 – May be fatal if swallowed and enters airways, due to low viscosity.

**Product-specific toxicological information**

| Identification | Acute Toxicity | Genus |
|---|---|---|
| Toluene<br>CAS: 108-88-3 | LD50 oral: 5580 mg/kg (approx.) | Rat |
| | LD50 dermal: >12000 mg/kg (approx.) | Rabbit |
| | LC50 inhalation (4h): 12500 ppm (approx.) | Rat |

## 12. ECOLOGICAL INFORMATION

**Toxic to aquatic life with long lasting effects.**

**Toxicity**

| Identification | Acute Toxicity | Species | Genus |
|---|---|---|---|
| Toluene<br>CAS: 108-88-3 | LC50: 13 mg/L (96h, approx.) | Pimephales promelas | Fish |
| | EC50: 5.5 mg/L (48h, approx.) | Daphnia magna | Crustacean |

**Persistence and degradability** Inherently biodegradable; also volatilises readily from water.

**Bioaccumulative potential** Moderate bioaccumulation potential (log Pow 2.73).

**Mobility in soil**

| Koc | Henry | Dry Soil | Moist Soil |
|---|---|---|---|
| Moderate-high | High (volatilises readily) | Volatilises | Volatilises |

**Results of PBT and vPvB assessment** Not classified as PBT or vPvB based on available data.

**Other adverse effects** Not described

## 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

Do not discharge to drains or watercourses. Recover/recycle where possible. Dispose of via a licensed solvent-waste contractor in accordance with local regulations.

Refer to national and local regulations on hazardous waste management (Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as amended).

## 14. TRANSPORT INFORMATION

**Transport of dangerous goods by land (ADR 2023 / RID 2023, India: Motor Vehicles Act / CMVR)**

| | |
|---|---|
| 14.1 UN number | UN1294 |
| 14.2 UN proper shipping name | TOLUENE |
| 14.3 Transport hazard class(es) | 3 |
| 14.4 Packing group | II |
| 14.5 Environmental hazard | Yes |
| 14.6 Special precautions for user | Physico-chemical properties: see section 9 |
| 14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code) | Not relevant |

**Transport of dangerous goods by sea (IMDG 41-22)**

| | |
|---|---|
| 14.1 UN number | UN1294 |
| 14.2 UN proper shipping name | TOLUENE |
| 14.3 Transport hazard class(es) | 3 |
| 14.4 Packing group | II |
| 14.5 Marine pollutant | Yes |
| 14.6 Special precautions for user | EmS Codes: F-E, S-D \| Segregation group: Not relevant |
| 14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code) | Not relevant |

**Transport of dangerous goods by air (IATA/ICAO 2024)**

| | |
|---|---|
| 14.1 UN number | UN1294 |
| 14.2 UN proper shipping name | TOLUENE |
| 14.3 Transport hazard class(es) | 3 |
| 14.4 Packing group | II |
| 14.5 Environmental hazard | Yes |
| 14.6 Special precautions for user | Physico-chemical properties: see section 9 |
| 14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code) | Not relevant |

## 15. REGULATORY INFORMATION

**Safety, health and environmental regulations specific for the product in question**

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

**Other legislation**

Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
The Petroleum Act, 1934 and Petroleum Rules, 2002 (where applicable to flammable liquids)
The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996
Public Liability Insurance Act, 1991

## 16. OTHER INFORMATION

**Legislation related to safety data sheets**

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

**Texts of the legislative phrases mentioned in sections 2 and 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.
H411: Toxic to aquatic life with long lasting effects.

*The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.*

**Advice related to training**

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

**Principal bibliographical sources**

The United Nations Economic Commission for Europe (UNECE); ECHA classification and labelling inventory; publicly available substance-specific safety data references.

**Abbreviations and acronyms**

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | COD: Chemical Oxygen Demand | BOD5: 5-day biochemical oxygen demand | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer | TWA: Time-weighted average | STEL: Short-term exposure limit

**Disclaimer:** The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

*(This document is computer generated and therefore does not require any signature.)*