



## SAFETY DATA SHEET

### TOLUENE

#### 1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

Product name: TOLUENE

Recommended use: Chemical for industrial

Manufacturer/Supplier: **MODERN CHEMICAL CO.,LTD.**  
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#### 2. HAZARDS IDENTIFICATION

##### Label elements

Pictogram



Signal word

Danger

##### Hazard statement(s):

- 1.) Highly Flammable liquid and vapour.
- 2.) May be fatal if swallowed and enters airways.
- 3.) Causes skin irritation.
- 4.) May cause drowsiness or dizziness.
- 5.) Suspected to damaging fertility or the unborn child.
- 6.) May causes damage to organs or organ system.
- 7.) Toxic to aquatic life.
- 8.) May causes damage to organs through prolonged or repeated exposure.



**Precautionary statement(s):**

- 1.) Keep away from heat/sparks/open flames/hot surfaces - No smoking.
- 2.) Keep container tightly closed.
- 3.) Ground/bond container and receiving equipment.
- 4.) Use explosion-proof electrical/ventilating/lighting equipment.
- 5.) Use non-sparking tools.
- 6.) Take precautionary measures against static discharge.
- 7.) Wear protective gloves/protective clothing/eye protection/face protection.
- 8.) Wash hands thoroughly after handling.
- 9.) Obtain special instructions before use.
- 10.) Do not handle until all safety precautions have been read and understood.
- 11.) Use personal protective equipment as required.
- 12.) Avoid breathing dust/fume/gas/mist/vapours/spray.
- 13.) Use only outdoors or in a well-ventilated area.
- 14.) Avoid release to the environment.
- 15.) IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
- 16.) In case of fire: Use appropriate media for extinguish.
- 17.) IF ON SKIN: Wash with plenty of soap and water.
- 18.) Specific treatment (see details on label).
- 19.) If skin irritation occurs: Get medical advice/attention.
- 20.) Take off contaminated clothing and wash before reuse.
- 21.) IF exposed or concerned, get medical advice/attention.
- 22.) IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
- 23.) Call a POISON CENTER or doctor/physician if you feel unwell.
- 24.) Get medical advice/attention if you fell unwell.
- 25.) IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- 26.) Do NOT induce vomiting.
- 27.) Store in a well-ventilated place. Keep cool.
- 28.) Store locked up.
- 29.) Protect from sunlight. Store in a well ventilated place.
- 30.) Dispose of contents/container in accordance with local regulation.



### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Synonym:** Methylbenzene, Monomethyl -benzene

Ingredients	% (w/w)	CAS NO.
TOLUENE	100	108-88-3

### 4. FIRST AID MEASURES

**Inhalation:**

Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately.

**Skin contact:**

Remove contaminated clothing. Immediately flush skin with large amounts of water, and follow by washing with soap and water if available. If persistent irritation occurs, obtain medical attention.

**Eye contact:**

Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.

**Ingestion:**

If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101 °F (38.3 °C), shortness of breath, chest congestion or continued coughing or wheezing. Immediately bring the nearest hospital.

### 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media:**

Use water spray or fog, foam, dry chemical or carbon dioxide.

**Unsuitable Extinguishing Media:**

Do not use water in a jet.

**Specific hazards arising from Chemicals:**

The vapour is heavier than air, spreads along the ground and distant ignition is possible. Will float and can be reignited on surface water. Carbon monoxide may be evolved if incomplete combustion occurs.



### Special protective equipment for fire-fighters:

Wear full protective clothing and self-contained breathing apparatus.

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions:

Avoid breathing vapours and contact with skin and eyes. Isolate hazard area and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low areas.

### Environmental precautions:

Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapor or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Ventilate contaminated area thoroughly.

### Methods and Material for Containment and Clean Up:

For small liquid spills (<1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For large liquid spills (>1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

## 7. HANDLING AND STORAGE

### Precautions for Safe Handling & Product Transfer:

Avoid inhaling vapour and/or mists. Avoid contact with skin, eyes, and clothing. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all



equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge. Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Handling temperature: Ambient.

#### **Conditions for Safe Storage & Unsuitable Materials:**

Bulk storage tanks should be diked (bunded). Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable products which are not harmful or toxic to man or to the environment. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Storage temperature: ambient. Avoid contact with natural, butyl, neoprene or nitrile rubbers.

### **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Occupational Exposure Limits:** STEL 150 - 160 ppm, TWA 20 - 100 ppm

**Appropriate Engineering Controls:** The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Firewater monitors and deluge systems are recommended. Eye washes and showers for emergency use.

#### **Individual Protection Measures**

**Respiratory protection:** Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapors. Where respiratory protective equipment is required, use a full face mask. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

**Hand protection:** Wear chemical protective gloves, eg. PVC.

**Eye protection:** Safety glasses with side shields. Chemical goggles.

**Skin and body protections:** Chemical resistant gloves/gauntlets, boots, and apron for chemical protection.

**Hygiene measures:** Eating, drinking water, smoking, is forbidden in the workplace. Wash your hands before eating.



## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Form, Color and Odor :</b> liquid, colorless, aromatic	<b>Evaporation rate :</b> 2 (nBuAc = 1)
<b>Melting Point :</b> (-98) - (-95) °C	<b>Specific gravity :</b> 0.869-0.873 g/cm <sup>3</sup> at 15.6 °C
<b>pH :</b> Not Applicable	<b>Solubility in water :</b> Immiscible
<b>Boiling point :</b> 110 - 111 °C	<b>Viscosity :</b> 0.63 mm <sup>2</sup> /s at 25 °C
<b>Vapour pressure :</b> 2.93 - 3.50 kPa at 20 °C	<b>Vapour density :</b> 3.1
<b>Lower explosive limits:</b> 1.2 - 1.3 %Vol	<b>Upper explosive limits:</b> 7.0 - 7.1 %Vol
<b>Auto-ignition temperature :</b> 480 - 536 °C	<b>Flash point:</b> 4.0 - 4.4 °C
<b>Odour threshold:</b> 1.74 ppm	<b>Flammability (solid, gas):</b> Yes
<b>Decomposition temperature:</b> N/A	<b>Solubility in other solvents:</b> N/A
<b>n-octanol/water partition coefficient (log P<sub>ow</sub>):</b> 2.65	

## 10. STABILITY AND REACTIVITY

<b>Chemical Stability:</b>	Stable under normal conditions of use. Reacts violently with strong oxidizing agents.
<b>Reactions:</b>	No data available.
<b>Possibility of Hazardous Reactions:</b>	Strong oxidizing agents.
<b>Conditions to avoid:</b>	Ignition sources, excess heat, confined spaces, sparks, open flames, prevent vapour accumulation.
<b>Materials to avoid:</b>	Strong oxidizing agents, acids, rust, catalysts for vinyl polymerization, 2,5-dimethyl-2,5-di(terbutylperox) hexane, peroxides, metals salts (e.g., aluminium chloride, copper chlorate, manganese nitrate, etc.), Nitrogen tetroxide, Nitric acid, Sulfuric acid, Silver perchlorate, Sulfur dichloride, Uranium hexafluoride.
<b>Hazardous decomposition products:</b>	Carbon monoxide (CO), carbon dioxide (CO <sub>2</sub> ), other pyrolysis products typical of burning organic material.

## 11. TOXICOLOGICAL INFORMATION

<b>Acute toxicity:</b>	LD50 (Oral, rat): 636 - >5000 mg/kg
	LD50 (Dermal, rabbit): >5000 - 14100 mg/kg



LC50 (Inhalation, rat): 49000 mg/m<sup>3</sup>-4h

LCLo (Inhalation, human): 200 ppm

**Sensitization:**

After inhalation: Expected to be low toxicity if inhaled. High concentration may cause central nervous system depression resulting in headache, dizziness and nausea. After skin contact: cause skin irritation.

After eyes contact: slightly irritating to the eye. Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

**Chronic toxicity:**

Not expected to be carcinogenic. Suspected of damaging fertility or the unborn child. Central nervous system: repeated exposure affects the nervous system. Effects were seen at high doses only. Respiratory system: repeated exposure affects the respiratory system. Effects were seen at high doses only. Visual system: may cause decreased color perception. These subtle changes have not been found to lead to: functional colour vision deficits. Auditory system: prolonged and repeated exposures to high concentrations noise interaction in the work environment may cause hearing loss.

**Further toxicological information:**

Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest. Abuse of vapours has been associated with organ damage and death.

## 12. ECOLOGICAL INFORMATION

### Toxicity

**Toxicity to fish:**

LC50 - *Lebistes reticulatus* (Fresh fish): 59.3 mg/l-96 h

Toxic: LL/EL/IL50: 1-10 mg/l

**Toxicity to daphnia and other aquatic invertebrates:**

EC50 - *Daphnia magna* (Crustacea): 18 mg/l-48h

Toxic: LL/EL/IL50: 1-10 mg/l

**Toxicity to algae:**

Practically non toxic: LL/EL/IL50: >100 mg/l

**Toxicity to Bacterial:**

No data available.

**Biodegradability Remarks:**

Readily biodegradable. Oxidises rapidly by photo-chemical reactions in air.

**Bioaccumulative Potential:**

Product is not likely to accumulate in biological organisms.



Mobility: Floats on water. If product enters soil, one or more constituents will be mobile and may contaminate groundwater.

Affected in any other way: No data available.

### 13. DISPOSAL CONSIDERATIONS

**Material Disposal:** Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national, and local laws and regulations.

**Container Disposal:** Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not, puncture, cut, or weld uncleaned drums. Send to drum recoverer or metal reclaimer.

### 14. TRANSPORT INFORMATION

#### ADR/ADNR

UN-NO: 1294 Class: 3 Packing group: II

Proper shipping group: TOLUENE

#### IMGD

UN-NO: 1294 Class: 3 Packing group: II

EMS: F-E S-D Marine pollutant : No

Proper shipping group: TOLUENE

#### IATA

UN-NO : 1294 Class: 3 Packing group: II

Proper shipping group: TOLUENE

### 15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

AICS : Listed

DSL : Listed

INV (CN) : Listed





ENCS (JP)	: Listed	(3)-21
TSCA	: Listed	
EINECS	: Listed	203-625-9
KECI (KR)	: Listed	97-1-298
KECI (KR)	: Listed	KE-33936
PICCS (PH)	: Listed	

### US Toxic Substances Control Act

All components of this product are on the TSCA Inventory.

### OSHA:

This product is not considered highly hazardous by OSHA.

### NFPA - USA

Health – 2, Flammability – 3, Reactivity – 0

### HMIS – USA

Health – 2, Flammability – 3, Reactivity – 0

### European Inventory of Existing Commercial Chemical Substances (EINECS)

The components of this product are on the EINECS inventory.

### EU Directives 67/548/EEC

**Classification** F, Xn

### Symbols



### R-Phrases

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: Vapours may cause drowsiness and dizziness.

### S-Phrases

S2: Keep out of the reach of children.

S36/37: Wear suitable protective clothing and gloves.

S46: If swallowed, seek medical advice immediately and show this container or label.

S62: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.



## Canada – WHMIS

This product has a WHMIS classification of B2, D2A, D2B.

## 16. Other Information

Modern Chemical Co., Ltd. provides the information contained herein in good faith but makes no representation as to its comprehensive or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.

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