1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Product Name: Xylene
Product Uses: Industrial solvent.
Manufacturer/Supplier: TOP Solvent Company Limited
555/1 Energy Complex Building A, 11th Floor
Viphavadi Rangsit Road Chatuchak, Bangkok 10900
Thailand
Telephone: +66 2 299 0003 or +66 2 797 2993
Fax: +66 2 797 2983
Emergency Telephone Number: +66 2 299 0003 [working hours] or +66 38 683090 ext.103 [out of working hours]
Other Information: TOPSol is a trademark owned by TOP Solvent Company Limited

2. HAZARDS IDENTIFICATION

GHS Classification
FLAMMABLE LIQUIDS, Category 3
ACUTE TOXICITY - ORAL, Category 5
SKIN CORROSION/IRRITATION, Category 2
ACUTE TOXICITY - INHALATION, Category 4
ACUTE TOXICITY - DERMAL, Category 4
Serious eye damage/eye irritation, Category 2A
Specific target organ toxicity – single exposure,
    Category 1 (Respiratory, liver, central nervous system, kidney)
    Category 3 (Drowsiness and dizziness)
Specific target organ toxicity – repeated exposure,
    Category 1 (Respiratory, nervous system)
ASPIRATION HAZARD, Category 1
AQUATIC TOXICITY (Acute), Category 2
AQUATIC TOXICITY (Chronic), Category 2

GHS label elements
Symbol(s)
Signal words: Danger

GHS Hazard Statements

PHYSICAL HAZARDS:
H226: Flammable liquid and vapor.

HEALTH HAZARDS:
H303: May be harmful if swallowed.
H304: May be fatal if swallowed and enters airways.
H312: Harmful in contact with skin.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.
H373: May cause damage to organs or organ system through prolonged or repeated exposure.

ENVIRONMENTAL HAZARDS:
H401: Toxic to aquatic life.

GHS Precautionary statements

Prevention
P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P264: Wash hands thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P281: Use personal protective equipment as required.

Response
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331: Do NOT induce vomiting.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P322: Specific measures (see details on this label).
P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P363: Wash contaminated clothing before reuse.
P304+P340: IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P332+P313: If skin irritation occurs: Get medical advice/attention.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P370+P378: In case of fire: Use appropriate media for extinction.

Storage
P403+P235: Store in a well-ventilated place. Keep cool.
P405: Store locked up.

Disposal
P501: Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity: Benzene, dimethyl
Synonyms: Dimethyl benzenes
Mixed xylenes
Solvent Xylene
CAS No.: 1330-20-7
EINECS No.: 215-535-7

Classification of components according to GHS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Synonyms</th>
<th>CAS</th>
<th>Hazard Class (category)</th>
<th>Hazard statement</th>
<th>Conc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3/16</td>
</tr>
</tbody>
</table>
4. FIRST AID MEASURES

**General Information**: Keep victim calm. Obtain medical treatment immediately.

**Inhalation**: DO NOT DELAY. Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

**Skin Contact**: Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

**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. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Give nothing by mouth. Do not induce vomiting.

**Notes to physician**

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

- Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.
- Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters.
- If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever.
- The onset of respiratory symptoms may be delayed for several hours after exposure.
- Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, lightheadedness, headache, nausea and loss of coordination.
- Continued inhalation may result in unconsciousness and death.
- Auditory system effects may include temporary hearing loss and/or ringing in the ears.

Immediate medical attention, special treatment

- Potential for chemical pneumonitis. Potential for cardiac sensitisation, particularly in abuse situations. Hypoxia or negative inotropes may enhance these effects. Consider: oxygen therapy. Call a doctor or poison control center for guidance.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Specific Hazards

- 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.

Extinguishing Media

- Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media

- Do not use water in a jet.

Protective Equipment for Firefighters

- Wear full protective clothing and self-contained breathing apparatus.

Other Advice

- Keep adjacent containers cool by spraying with water.
6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations. Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal.

**Personal Precautions, Protective Equipment and Emergency Procedures**

- **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 vapour 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 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.
- **For small liquid spills (< 1 drum)**, transfer by mechanical means to a labelled, 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.

**Additional Advice**

- **Notify authorities** if any exposure to the general public or the environment occurs or is likely to occur. Local
7. HANDLING AND STORAGE

General Precautions: Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. On guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Precautions for safe Handling: 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 (<= 1 m/sec until fill pipe submerged to twice its diameter, then <= 7 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Handling Temperature: Ambient.

Conditions for safe Storage: 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.
**Xylene**

Material Safety Data Sheet

Storage Temperature: Ambient.

**Product Transfer**: 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 (\(\leq 1\) m/sec until fill pipe submerged to twice its diameter, then \(\leq 7\) m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.

**Recommended Materials**: For containers, or container linings use mild steel, stainless steel.

**Unsuitable Materials**: Natural, butyl, neoprene or nitrile rubbers.

**Container Advice**: Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

**Other Advice**: Ensure that all local regulations regarding handling and storage facilities are followed.

---

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

**Occupational Exposure Limits**

<table>
<thead>
<tr>
<th>Material</th>
<th>Source</th>
<th>Type</th>
<th>ppm</th>
<th>mg/m³</th>
<th>Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylbenzene</td>
<td>ACGIH</td>
<td>TWA</td>
<td>20 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xylene, Mixed Isomers</td>
<td>ACGIH</td>
<td>TWA</td>
<td>100 ppm</td>
<td>150 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>STEL</td>
<td>150 ppm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Material** | **Source** | **Hazard Designation**  
Ethylbenzene | ACGIH | Confirmed animal carcinogen with unknown relevance to humans.

**Biological Exposure Index (BEI)** - See reference for full details

---

8/16  
SDS TS/EN
## Xylene

**Material Safety Data Sheet**

**Xylene**

Version 2.1

Effective Date 1-June-2012

### Material Determinant Sampling time BEI Reference

<table>
<thead>
<tr>
<th>Material</th>
<th>Determinant</th>
<th>Sampling time</th>
<th>BEI</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylbenzene</td>
<td>Ethyl benzene in End-exhaled air</td>
<td>Sampling time: Not critical.</td>
<td></td>
<td>ACGIH BEL (2008)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sum of mandelic acid and phenylglyoxylic acid in Creatinine in urine</td>
<td>Sampling time: End of shift at end of work week.</td>
<td>0.7 g/g</td>
<td>ACGIH BEL (2009)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xylene, Mixed Isomers</td>
<td>Methylhippuric acids in Creatinine in urine</td>
<td>Sampling time: End of shift.</td>
<td>1.5 g/g</td>
<td>ACGIH BEL (2009)</td>
</tr>
</tbody>
</table>

### 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

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

### Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387. Where respiratory protective equipment is required, use a fullface 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** : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS:2161) made from the following materials may provide suitable chemical protection: Longer term protection: Viton. Incidental contact/Splash protection: Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

**Eye Protection** : Chemical splash goggles (chemical monogoggles). Approved to EU Standard EN166, AS/NZS:1337.

**Body protection** : Chemical resistant gloves/gauntlets, boots, and apron. Where risk of splashing or in spillage clean up, use chemical resistant one-piece overall with integral hood.

**Thermal hazards** : Not applicable

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colourless Liquid.
Odour: Aromatic
Odour threshold: 0.27 ppm
pH: Not applicable
Boiling point: Typical 136 - 145 °C / 277 - 293 °F
Melting / freezing point: > -48 °C / -54 °F
Flash point: Typical 23 - 27 °C / 73 - 81 °F (Abel)
Explosion / Flammability limits in air: 1 - 7.1 %(V)
Auto-ignition temperature: 432 - 530 °C / 810 - 986 °F (ASTM E-659)
Flammability (solid, gas): Yes
Vapour pressure: Typical 4.5 kPa at 50 °C / 122 °F
   Typical 0.8 - 1.2 kPa at 20 °C / 68 °F
   Typical 0.2 kPa at 0 °C / 32 °F
Density: Typical 870 kg/m3 at 15 °C / 59 °F (ASTM D-1298)
Water solubility: 0.175 kg/m3
n-octanol/water partition coefficient (log Pow): 3.12 - 3.2
Decomposition temperature: Note: Stable under normal conditions of use., Reacts violently with strong oxidising agents.
Dynamic viscosity: Data not available.
Kinematic viscosity: < 0.9 mm2/s at 20 °C / 68 °F
Vapour density (air=1): 3.7
Evaporation rate (nBuAc=1): 13.5 (DIN 53170, di-ethyl ether=1)
   0.76 (ASTM D 3539, nBuAc=1)
Surface tension: Typical 28.7 mN/m at 20 °C / 68 °F (ASTM D-971)
Molecular weight: 106 g/mol
## 10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemical stability</strong></td>
<td>Stable under normal conditions of use. Reacts violently with strong oxidising agents.</td>
</tr>
<tr>
<td><strong>Conditions to Avoid</strong></td>
<td>Avoid heat, sparks, open flames and other ignition sources. Prevent vapour accumulation.</td>
</tr>
<tr>
<td><strong>Incompatible materials</strong></td>
<td>Strong oxidising agents.</td>
</tr>
<tr>
<td><strong>Hazardous Decomposition Products</strong></td>
<td>Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.</td>
</tr>
<tr>
<td><strong>Possibility of hazardous Reactions</strong></td>
<td>Data not available.</td>
</tr>
<tr>
<td><strong>Sensitivity to Static Discharge</strong></td>
<td>Yes</td>
</tr>
</tbody>
</table>

## 11. TOXICOLOGICAL INFORMATION

**Information on Toxicological effects**

**Basis for Assessment**: Information given is based on product testing.

**Likely routes of exposure**: Inhalation is the primary route of exposure although absorption may occur through skin contact or following accidental ingestion.

**Acute Toxicity**

- **Acute Oral Toxicity**: May be harmful if swallowed. LD50 >2000 - <=5000 mg/kg.
- **Acute Dermal Toxicity**: Harmful in contact with skin.
- **Acute Inhalation Toxicity**: Harmful if inhaled. LC50 >10.0 - <=20.0 mg/l.

**Skin corrosion/irritation**: Cause skin irritation.

**Serious eye damage/irritation**: Cause serious eye irritation.

**Respiratory Irritation**: Inhalation of vapours or mists may cause irritation to the
respiratory system.

**Respiratory or skin Sensitization**
- Not expected to be a skin sensitiser.

**Aspiration hazard**
- Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

**Germ cell mutagenicity**
- Not mutagenic.

**Carcinogenicity**
- An increased tumour incidence has been observed in experimental animals; the significance of this finding to man is unknown. (Ethylbenzene)

**Reproductive and Developmental Toxicity**
- Does not impair fertility.
- Not expected to be a development toxicant

**Specific target organ toxicity - single exposure**
- High concentration may cause central nervous system depression resulting in headache, dizziness and nausea, continued inhalation may result in unconsciousness and/or death. Inhalation of vapours or mists may cause irritation to the respiratory system.

**Specific target organ toxicity - repeated exposure**
- Harmful: danger of serious damage to health by prolonged exposures through inhalation.

**Additional Information**
- Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest.

### 12. ECOLOGICAL INFORMATION

**Basis for Assessment**
- Incomplete ecotoxicological data are available for this product. The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products.

**Acute Toxicity**
- **Fish**
  - Toxic: LL/EL/IL50 >1 - <=10 mg/l
- **Aquatic Invertebrates**
  - Toxic: LL/EL/IL50 >1 - <=10 mg/l
- **Algae**
  - Toxic: LL/EL/IL50 >1 - <=10 mg/l
- **Microorganisms**
  - Practically non toxic: LL/EL/IL50 >100 mg/l

**Chronic Toxicity**
- **Fish**
  - NOEC/NOEL > 1.0 - <= 10 mg/l (test data)
- **Aquatic Invertebrates**
  - NOEC/NOEL expected to be > 0.1 - <= 1.0 mg/l (test data)

**Mobility**
- Floats on water, adsorbs to soil and has low mobility.

**Persistence/ degradability**
- Readily biodegradable.
Xylene
Version 2.1
Effective Date 1-June-2012

Material Safety Data Sheet

Bioaccumulative potential: Does not bioaccumulate significantly.
Other Adverse Effects: In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.

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. Do not dispose into the environment, in drains or in water courses. Waste product should not be allowed to contaminate soil or water.

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.

Local Legislation: Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

Land (as per ADR classification): Regulated
Class: 3
Packing group: III
Hazard indentification no.: 30
UN No.: 1307
Danger label (primary risk): 3
Proper shipping name: Xylenes
Environmentally Hazardous: No

IMDG
Identification number: UN 1307
Proper shipping name: XYLENES
Class / Division: 3
Packing group: III
Marine pollutant: No
IATA (Country variations may apply)
UN No. : 1307
Proper shipping name : Xylenes
Class / Division : 3
Packing group : III

15. REGULATORY INFORMATION

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

Chemical Inventory Status
AICS : Listed.
DSL : Listed.
INV (CN) : Listed.
ENCS (JP) : Listed. (3)-3
TSCA : Listed.
EINECS : Listed. 215-535-7
KECI (KR) : Listed. 97-1-275
KECI (KR) : Listed. KE-35427
PICCS (PH) : Listed.

16. OTHER INFORMATION

GHS Hazard statements
H226 Flammable liquid and vapour.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H332 Harmful if inhaled.

MSDS Version Number : 2.1
MSDS Effective Date : 1-June-2012
Uses and Restrictions : Industrial Solvent. Raw material for use in the chemical industry. Restricted to professional users.
MSDS Distribution : The information in this document should be made
Xylene
Version 2.1
Effective Date 1-June-2012

Material Safety Data Sheet

available to all who may handle the product

Disclaimer: This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.