SAFETY DATA SHEET (SDS)
XYLENE

1. Identification

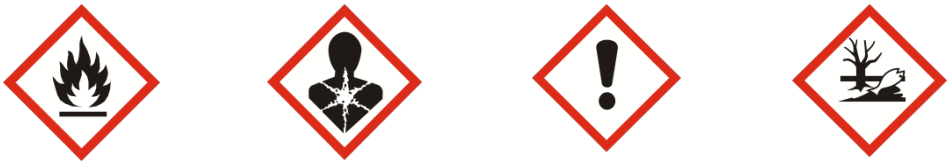
SDS Record Number	:	PCS 08006	
Date of SDS	:	9 March 2022	
Identity of the substance	:	Xylene	
Product Description	:	Aromatic hydrocarbon	
Other names/synonyms	:	Dimethylbenzene, Methyl Toluene, Xylol, Xylenes (IBC code), Mixed Xylenes	
Name of the supplier	:	Petrochemical Corporation of Singapore (Private) Limited	
Recommended uses	:	Solvent, diluent, chemical feedstock, or fuel	
Contact detail of the supplier	:	100 Ayer Merbau Road, Singapore 628277	
	:	+65 68672102	
24-Hour Emergency contact	:	Asia Pacific	+65 3158 1074 (Singapore)
		China	400 120 6011
		Europe, Israel & Americas	+44 (0) 1235 239 670 (UK)
		Middle East & Africa	+44 (0) 1235 239 671 (UK)

2. Hazards Identification

GHS Classification

Hazard Class	Hazard Category
• Flammable Liquid	3
• Acute Toxicity (Inhalation)	4
• Skin Corrosion/Irritation	2
• Serious Eye Damage/ Irritation	2
• Carcinogenicity	2
• Toxic to reproduction	1B
• STOT (Single exposure)	1 (central nervous system, respiratory organs) 3 (respiratory tract irritation, narcotic effects)
• STOT (Repeated exposure)	1 (central nervous system) 2 (auditory organs)
• Aspiration hazard	1
• Acute hazard to the Aquatic Environment	1
• Chronic hazard to the Aquatic Environment	2

Pictograms



Signal Word: Danger

Hazard Statements

- Flammable liquid and vapour
- Harmful if inhaled
- Causes skin irritation
- Causes serious eye irritation
- Suspected of causing cancer
- May damage fertility or the unborn child

- Causes damage to central nervous system and respiratory organs
- May cause respiratory irritation
- May cause drowsiness and dizziness
- Causes damage to central nervous system through prolonged or repeated exposure
- May cause damage to auditory organs through prolonged or repeated exposure
- May be fatal if swallowed and enters airways
- Very toxic to aquatic life
- Toxic to aquatic life with long lasting effects

Precautionary Statements

Prevention

- Keep container tightly closed.
- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Ground/bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Take precautionary measures against static discharge.
- Use only non-sparking tools.
- Wash thoroughly after handling.
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Do not eat, drink or smoke when using this product.
- Do not breathe dust/fume/gas/mist/vapours/spray.
- Avoid release to the environment.
- Use only outdoors or in a well-ventilated area.

Response

- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- Call a POISON CENTER/doctor/physician if you feel unwell.
- In case of fire: Use appropriate media for extinction.
- If INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF ON SKIN: Wash with plenty of water and soap.
- Take off contaminated clothing and wash it before reuse.
- If skin irritation occurs: Get medical advice/attention.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.
- IF exposed or concerned: Call a POISON CENTER/doctor/physician.
- IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician.
- Do NOT induce vomiting.
- Collect spillage.

Storage

- Store in a well-ventilated place. Keep cool.
- Store locked up.

Disposal

- Dispose of the contents in accordance to the local mandatory rules and regulations.

3. Composition/Information On Ingredients

Chemical identification	: Xylene
Common name(s) / synonym(s)	: Dimethylbenzene, Methyl Toluene, Xylol, Mixed Xylenes
CAS number / EC number	: 1330-20-7/215-535-7

Chemical Identification	CAS number	Concentration
Ethyl Benzene	100-41-4	45 - 69 wt%
m-Xylene	108-38-3	15 - 30 wt%
p-Xylene	106-42-3	6 - 13 wt%
o-Xylene	95-47-6	7 - 15 wt%
Toluene	108-88-3	0 - 0.1 wt%

4. First-Aid Measures

Eye: Irrigate immediately. If this chemical contacts the eyes, immediately wash (irrigate) the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately.

Skin: Soap wash promptly. If this chemical contacts the skin, promptly flush the contaminated skin with soap and water. If this chemical penetrates the clothing, promptly remove the clothing and flush the skin with water. If irritation persists after washing, get medical attention.

Breathing: Respiratory support. If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform artificial resuscitation. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Swallow: Medical attention immediately. If this chemical has been swallowed, get medical attention immediately. DO NOT induce vomiting. Keep at rest.

5. Fire-Fighting Measures

Extinguishing media

- Use foam or dry chemical to extinguish fire.
- Use water spray to cool fire exposed surfaces and to protect personnel.
- Shut off fuel to fire if possible to do so without hazard. If a leak or spill has not ignited use water spray to disperse the vapours.

Specific Hazards Arising From The Chemical:

- **General Hazards:** Flammable Liquid; may release vapours that form flammable mixtures at or above the flash point. Toxic gases will form upon combustion.
- **Hazardous Combustion Products:** Fumes, smoke, and carbon monoxide.
- This liquid is volatile and gives off invisible vapours.
- Either the liquid or vapour may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode.

Special Protective Equipment And Precautions For Fire Fighters

- Respiratory and eye protection required for fire fighting personnel.
- Avoid spraying water directly into storage containers due to danger of boilover.
- A self-contained breathing apparatus (SCBA) is recommended for indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA is optional.

6. Accidental Release Measures

- Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
- Prevent spills from entering sewers, watercourses or low areas.

- Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
- Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.
- Warn occupants and shipping in surrounding and downwind areas of fire and explosion hazard and request all to stay clear. Remove from surface by skimming or with suitable absorbents.
- If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters.
- Notify the appropriate authorities immediately.
- Take all additional action necessary to prevent and remedy the adverse effects of the spill.
- Provide adequate Ventilation.
- Remove all ignition sources.
- Collect leaking and spilled liquid in sealable containers as far as possible.
- Absorb remaining liquid in sand or inert absorbent and remove to safe place.
- (Extra personal protection: filter respirator for organic gases and vapours.)

7. Handling And Storage

Precautions for safe handling

- Keep container closed. Handle and open containers with care.
- **Do not** handle or store near an open flame, heat, or other sources of ignition.
- **Do not** pressurize, cut, heat, or weld containers.
- Empty product containers may contain product residue.
- **Do not** reuse empty containers without commercial cleaning or reconditioning.
- Keep away from sources of ignition and from contact with oxidizing materials and strong acids

Conditions for safe storage, including any incompatibilities

- Store in a cool, well ventilated place away from incompatible materials.
- Fireproof. Separated from strong oxidants and strong acids.
- Protect material from direct sunlight.
- Material will accumulate static charges, which may cause an electrical spark (ignition source).
- Use proper earthing procedures.

8. Exposure Controls/Personal Protection

Control Parameters/ Exposure Limits

- Ethyl Benzene (CAS: 100-41-4)
  Permissible Exposure Level (Short Term) in Singapore: 125ppm (543mg/m3)
  Permissible Exposure Level (Long Term) in Singapore: 100ppm (434mg/m3)
  TLV: 20 ppm as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans); (ACGIH).
  PEL: 100 ppm (435 mg/m3) (OSHA Z-1)

- Xylene (CAS: 1330-20-7)
  Permissible Exposure Level (Short Term) in Singapore: 150ppm (651mg/m3)
  Permissible Exposure Level (Long Term) in Singapore: 100ppm (434mg/m3)
  TLV: 100 ppm as TWA; 150 ppm as STEL; A4 (not classifiable as a human carcinogen); (ACGIH).
  PEL: 100 ppm (435 mg/m3) (OSHA Z-1)

- Toluene (CAS: 108-88-3)
  Permissible Exposure Level (Long Term) in Singapore: 50ppm (188mg/m^3)
  TLV: 20 ppm (75mg/m^3) as TWA; (ACGIH).
  PEL: 200 ppm as TWA (OSHA Z-2)

Appropriate engineering controls

- The use of local exhaust ventilation is recommended to control emissions near the source.
- Laboratory samples should be handled in a fume hood.
- Provide mechanical ventilation of confined spaces.
- Use explosion-proof ventilation equipment.

Personal Protective Equipment (PPE)

- The selection of personal protective equipment varies depending upon conditions of use.
- **Skin:** Prevent skin contact. Wear appropriate personal protective clothing to prevent skin contact.
- **Eyes:** Prevent eye contact. Wear appropriate eye protection to prevent eye contact.
- **Wash skin:** When contaminated. The worker should immediately wash the skin when it becomes contaminated.
- **Remove:** When wet (flammable). Work clothing that becomes wet should be immediately removed due to its flammability hazard (i.e., for liquids with a flash point <100°F).
- **Change:** No recommendation. No recommendation is made specifying the need for the worker to change clothing after the work shift.
- Where prolonged and/or repeated skin and eye contact is likely to occur, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.
- Where eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear safety glasses with side shields.

Respirator Recommendations (NIOSH/OSHA)
Up to 900 ppm**:**
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions**:**
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000). Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

APF: Assigned Protection Factor

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9. Physical And Chemical Properties

Property	Value, Description
Appearance (physical state, colour etc);	Clear, colourless liquid.
Odour;	Aromatic odour.
Odour threshold;	Not available
pH;	Not applicable
Melting point/freezing point;	-35 deg C
Initial boiling point and boiling range;	139 to 141 deg C
Flash point;	27 deg C TCC Minimum
Evaporation rate;	0.8 Approximate
Upper/lower flammability or explosive limits;	1.9 to 12.3 % by volume Approximate
Vapour pressure;	1.893 kPa at 38 deg C Approximate
Vapour density;	3.7 (Air = 1)
Relative density;	0.87 at 15.5 deg C
Solubility(ies);	0.02% at 25 deg C in water
Partition coefficient: n-octanol/water;	Not available
Auto-ignition temperature;	500 deg C Approximate
Decomposition temperature;	Not available
Viscosity.	0.69 cST at 25 deg C Approximate

10. Stability And Reactivity

Reactivity/Chemical Stability: This product is stable under normal temperature and pressure

Possibility Of Hazardous Reactions: Hazardous polymerization will not occur

Conditions To Avoid: Temperature above ambient, ignition sources

Incompatible Materials: Strong oxidizing agents, concentrated nitric and sulphuric acids, acetic acid, halogen, molten sulphur and 1,3-dichloro-5,5-dimethyl-2,4-imidazolidindione (dichlorohydrantoin).

Hazardous Decomposition Products: carbon monoxide, carbon dioxide

11. Toxicological Information

LD50: 4-g/kg oral rat
LC50: 6,500-ppm rat

Inhalation: High vapour/aerosol concentrations (greater than approximately 1000 ppm) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anaesthesia, drowsiness, unconsciousness, and other central nervous system effects, including death. Negligible hazard at normal temperatures (up to 38 deg C).

Eye Contact: Irritating, but will not injure eye tissue.

Skin Contact: Frequent or prolonged contact may irritate the skin.
Low toxicity. Brief contact with the liquid will not result in significant irritation unless evaporation is prevented. Skin contact may aggravate an existing dermatitis condition.

Ingestion: Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death. Low toxicity.

Special Health Precautions: Health studies have shown that many petroleum hydrocarbons pose potential human health risks, which may vary, from person to person. As a precaution, exposure to liquids, vapours, mists or fumes should be minimised.

Rats and rabbits exposed to a mixture of xylene isomers at a concentration of 690 ppm for eight hours daily, six days per week showed no blood abnormalities, but rabbits exposed on the same regimen at 1150 ppm for 55 days showed a decrease in red and white blood cell counts and an increase in platelet count (Fabre and Truhaut 1954, as cited in ACGIH 1986/Ex. 1-3, p. 637).

Studies of workers exposed to xylene revealed headache, fatigue, lassitude, irritability, and gastrointestinal disturbances as the most common symptoms (Gerarde 1960d/Ex. 1-738a). At unspecified exposure levels, Browning (1965b/Ex. 1-1016) also noted gastrointestinal disturbances, in addition to kidney, heart, liver, and neurological damage; blood dyscrasias, some of which resulted in death, were also reported in these workers. A study by Nelson, Enge, Ross et al. (1943/Ex. 1-66), in which human volunteers were exposed to 200 ppm xylene, found eye, nose, and throat irritation in the subjects at this level of exposure.

NIOSH developed a criteria document for xylene in 1975 (NIOSH 1975; as cited in ACGIH 1986/Ex. 1-3, p. 637), in which the work of Morley, Eccleston, Douglas, and colleagues (1970/Ex. 1-794) was discussed. These authors observed liver dysfunction and renal impairment in three workers overexposed to xylene (estimated concentration of 10,000 ppm). One of these workers died, but the others recovered slowly. Furniture polishers were reported by Matthaus (1964/Ex. 1-830) to have suffered corneal damage as a result of exposure to xylene at unknown concentrations.

12. Ecological Information

Ethylbenzene
Fish: 96-hour LC50 = 3.7 mg/L for fish (Morone saxatilis) (Initial Risk Assessment (NITE, CERI, NEDO, 2007))
Crustacea: 96-hour LC50 = 0.42 mg/L for crustacea (Crangon franciscorum) (Initial Risk Assessment (NITE, CERI, NEDO, 2007))

O-xylene
Algae: 72-hour ErC50 = 0.799 mg/L for algae (Desmodesmus subspicatus) (Results of Aquatic Toxicity Tests of Chemicals conducted by Environment Agency in Japan (Environment Agency, 1996), Environmental Risk Assessment for Chemical Substances Vol. 10 (Ministry of the Environment, 2012))
Fish: 96-hour LC50 = 7.424 mg/L for fish (Oryzias latipes) (Results of Aquatic Toxicity Tests of Chemicals conducted by Environment Agency in Japan (Environment Agency, 1996), Environmental Risk Assessment for Chemical Substances Vol. 10 (Ministry of the Environment, 2012), Initial Risk Assessment (NITE, CERI, NEDO, 2005)).

Mobility: If product enters soil, it will be highly mobile and may contaminate groundwater. Floats on water.
Persistence/degradability: Readily biodegradable. Oxidises rapidly by photochemical reactions in air.
Bioaccumulation: Does not bioaccumulate significantly.

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.
- 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.
- Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations.
- **Do not** let this chemical enter the environment.

14. Transport Information

Land (ADR)
UN Number: 1307
UN proper shipping name: XYLENES
Class: 3
Packing Group: III
Labels: 3
Hazard Identification Number: 30

Air (IATA)
UN Number: 1307
UN proper shipping name: XYLENES
Class: 3
Packing Group: III
Labels: 3

Sea (IMDG)
UN Number: 1307
UN proper shipping name: XYLENES
Class: 3

Packing Group: III
Labels: 3
Marine pollutant: No

Transport in Bulk (Annex II of MARPOL 73/78 and the IBC code)
Pollution Category: Y
Ship Type: 2
Product Name: Xylenes

15. Regulatory Information

Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations:
This product is subject to the SDS, labelling and PEL and other requirements in the Act/Regulations.

Fire Safety Act and Fire Safety (Petroleum and Flammable Materials) Regulations:
This product is subject to the requirements of this Regulations.

Maritime and Port Authority of Singapore (Dangerous Goods, Petroleum and Explosives) Regulations:
This product is subject to the requirements of this Regulations.

16. Other Information

Prepared By: Material Safety Committee
SDS Prepared on: 1/12/2010
Reviewed 1 on 1/10/2013
Revised 2 on 11/2/2015
Revised 3 on 18/3/2015
Revised 4 on 10/10/2016
Revised 5 on 4/10/2021
Revised 6 on 9/3/2022

Revision (2) Notes	
1	Sect. 14: Added information for Transport in Bulk according to MARPOL 73/78 Annex II
Revision (3) Notes	
1	Sect. 2: Flammable Liquid hazard category changed from 2 to 3
Revision (4) Notes	
1	Sect. 2: Added Hazard Statement for carcinogenicity
Revision (5) Notes	
1	Sect. 2: Updated to remove Acute Toxicity (Oral) and include chronic toxicity to aquatic environment. Revisions to the Hazard Categories for STOT (SE), STOT (RE), and Acute toxicity to aquatic environment.
2	Sect. 8: Added/updated Control Parameters and Exposure Limits for relevant components in the mixture
3	Sect. 14: Added relevant transport information
4	Sect. 15: Included applicable national regulations (Singapore)
Revision (6) Notes	
1	Sect. 14: Revised Packing Group for Air and Sea transport

CAUTION: The information given above ("**the Information**") relates only to the substance or mixture listed herein. The Information may not be valid when used in combination with any other substance or mixture or in any process. If the substance or mixture is to be used for a purpose other than that stated herein or under conditions other than specified herein, the Information cannot be relied upon as being complete or accurate, and the user is advised to consult the supplier before using the substance or mixture for such other purpose or under such other conditions. The Information is given based on information available at the indicated date of preparation and no representation or warranty is given that it will be correct as of any time after the indicated date of preparation.