

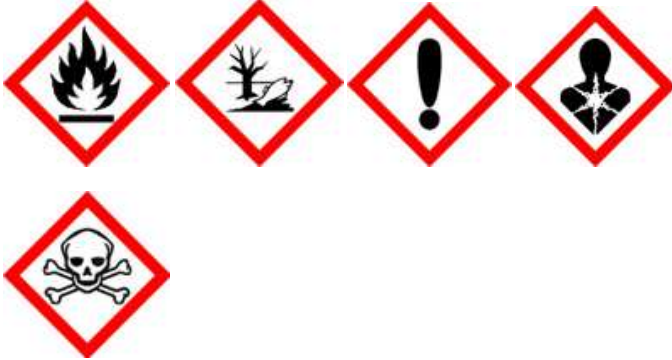
<b>MSDS</b>	<b>Material Safety Data Sheet</b>
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## **XYLENE**

## 1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

PRODUCT NAME	Xylene
RECOMMENDED USE & RESTRICTIONS ON USE	Research use only
INFORMATION OF MANUFACTURER/IMPORTER/SUPPLIER	
COMPANY	
ADDRESS	
EMERGENCY PHONE	
E-MAIL ADDRESS	

## 2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION	<p>Flammable liquids : Category 3          Acute toxicity(Oral) : Category 4          Acute toxicity(Inhalation) : Category 4          Skin corrosion/irritation : Category 2          Serious eye damage/Eye irritation : Category 2          Reproductive toxicity : Category 1B          Specific target organ systemic toxicity Single exposure : Category 1          Specific target organ toxicity Single exposure : Category 3(anesthesia)          Specific target organ systemic toxicity Repeated exposure : Category 1          Aspiration toxicity : Category 2          Chronic aquatic toxicity : Category 2</p>	
LABEL ELEMENTS	PICTOGRAM	

	HAZARD SYMBOL	DANGER
	HAZARD STATEMENTS	<p>Flammable liquid and vapour.</p> <p>May be harmful if swallowed and enters airways.</p> <p>Harmful in contact with skin.</p> <p>Causes skin irritation.</p> <p>Causes serious eye irritation.</p> <p>Harmful if inhaled.</p> <p>May cause drowsiness or dizziness.</p> <p>May damage fertility or the unborn child.</p> <p>Causes damage to organs.</p> <p>Causes damage to organs through prolonged or repeated exposure.</p> <p>Toxic to aquatic life with long lasting effects.</p>
	PRECAUTIONARY STATEMENTS	<p>Obtain special instructions before use.</p> <p>Do not handle until all safety precautions have been read and understood.</p> <p>Keep away from heat/sparks/open flames/hot surfaces. No smoking.</p> <p>Keep container tightly closed.</p> <p>Ground/bond container and receiving equipment.</p> <p>Use explosion-proof electrical/ventilating/lighting equipment.</p> <p>Use only non-sparking tools.</p> <p>Take precautionary measures against static discharge.</p> <p>Do not breathe dust/fume/gas/mist/vapours/spray.</p> <p>Avoid breathing dust/fume/gas/mist/vapours/spray.</p> <p>Wash thoroughly after handling.</p> <p>Do not eat, drink or smoke when using this product.</p> <p>Use only outdoors or in a well-ventilated area.</p> <p>Avoid release to the environment.</p> <p>Wear protective gloves/protective clothing/eye protection/face protection.</p> <p>Use personal protective equipment as required.</p> <p>IF SWALLOWED: Immediately call a POISON CENTER or</p>

		<p>doctor/physician.</p> <p>IF ON SKIN: Gently wash with plenty of soap and water.</p> <p>IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.</p> <p>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>IF exposed: Call a POISON CENTER or doctor/physician.</p> <p>IF exposed or concerned: Get medical advice/attention. Call a POISON CENTER or doctor/physician if you feel unwell. Get medical advice/attention if you feel unwell.</p> <p>Specific treatment (see ... on this label).</p> <p>Do NOT induce vomiting.</p> <p>If skin irritation occurs: Get medical advice/attention.</p> <p>If eye irritation persists: Get medical advice/attention.</p> <p>Take off contaminated clothing and wash before reuse.</p> <p>In case of fire: Use ... for extinction.</p> <p>Collect spillage.</p> <p>Store locked up.</p> <p>Store in a well-ventilated place. Keep container tightly closed.</p> <p>Store in a well-ventilated place. Keep cool.</p> <p>Dispose of this material and its container in accordance with local/regional/national/international regulation.</p>
OTHER HAZARDS (NFPA)	Health	No data
	Fire	No data
	Reactivity	No data

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMILCAL IDENTITY	SYNONYMS	CAS NUMBER	ASSAY
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Xylene	Methyl toluene; Dimethyl benzene	1330-20-7	Above 80%(EP)
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#### 4. FIRST AID MEASURES

GENERAL ADVICE	Wash off immediately with soap and plenty of water. In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit. Use personal protective equipment.
IN CASE OF EYE CONTACT	Remove any contact lenses at once. Flush eyes well with a large amount of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If irritation persists, transport to a hospital immediately.
IN CASE OF SKIN CONTACT	Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. If irritation persists, transport to a hospital immediately.
IF INHALED	Move victim to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, administer artificial respiration. Maintain normal body temperature with a blanket. If irritation persists, transport to a hospital immediately.
IF SWALLOWED	Rinse mouth, give plenty of water to dilute the substance and induce vomiting(only in conscious persons ! ). Never give anything by mouth to an unconscious person. Transport to a hospital immediately.

#### 5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA	Carbon dioxide, dry chemical powder, foam, water spray
SPECIFIC HAZARDS ARISING FROM THE CHEMICAL	Flammable liquid. Hazardous toxic and irritating fumes or smoke may be emitted.
SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:	Firemen should wear normal protective equipment(full bunker gear)and positive-pressure self-contained breathing apparatus.

## 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS	Remove ignition sources and ventilate the area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes.
ENVIRONMENTAL PRECAUTIONS	Prevent spills from entering sewers, watercourses or low areas.
METHODS FOR CLEANING UP	Do not touch spilled material without suitable protection. After material is completely picked up, wash the spill site with soap and water and ventilate the area. Put all wastes in a plastic bag for disposal and seal it tightly. Remove, clean, or dispose of contaminated clothing.

## 7. HANDLING AND STORAGE

PRECAUTION FOR SAFE HANDLING	Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Handle material with suitable protection away from source of heat or ignition and use non-sparking type tools.
CONDITIONS FOR SAFE STORAGE	Store away from sunlight in well-ventilated dry place at room temperature (preferably cool place). Keep container tightly closed.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE STANDARDS	ACGIH	TWA 100 ppm    STEL 150 ppm
APPROPRIATE ENGINEERING CONTROLS:		Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
INDIVIDUAL PROTECTION MEASURES	RESPIRATORY PROTECTION	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup Sigma-Aldrich - 270997 Page 4 of 7 to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators

		and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
	EYE PROTECTION	Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
	SKIN PROTECTION	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.
	BODY PROTECTION	Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	FORM	Liquid
	COLOR	Colorless
ODOUR		Characteristic odor
ODORODOUR THRESHOLD VALUE		0.2-2 ppm
pH		No data
FREEZING POINT :		-25°C(ortho-), -47°C(meta-), 13.4°C(para-)
INITIAL BOILING POINT		144°C(ortho-), 139°C(meta-), 138°C(para-)
FLASH POINT		32°C(ortho-), 27°C(meta-), 27°C(para-)
EVAPORATING RATE		No data
FLAMMABILITY(solid, gas)		No data
EXPLOSIVE LIMITS		6.7/0.9%(ortho-), 7.0/1.1%(meta-), 7.0/1.1%(para-)
VAPOR PRESSURE		0.7kPa(ortho-), 0.8kPa20°C (meta-), 0.9kPa(para-) (20°C)
SOLUBILITY IN	WATER	178mg/L(ortho-), 162mg/L(meta-), 198mg/L(para-)

VAPOR DENSITY	3.7
RELATIVE DENSITY	0.864
PARTITION COEFFICIENT: N-OCTANOL/WATER	3.12(ortho-), 3.2(meta-), 3.15(para-)
AUTOIGNITION TEMPERATURE	463 °C (ortho-), 527 °C (meta-), 527 °C (para-)
DECOMPOSITION TEMPERATURE	No data
VISCOSITY	No data
MOLECULAR WEIGHT	106.16

## 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY & POSSIBILITY OF HAZARDOUS REACTIONS	Stable under recommended storage conditions.
CONDITIONS TO AVOID	Sunlight, heat, open flames, high temperature, sparks, static electrical charge, other ignition sources
INCOMPATIBLE MATERIALS	Oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS	Carbon monoxide

## 11. TOXICOLOGICAL INFORMATION

INFORMATION ON THE LIKELY ROUTES OF EXPOSURES:	No data	
HEALTH HAZARD INFORMATION	ACUTE TOXICITY	LDLo(oral, human): 50mg/kg(YAKUD5 22,883,1980) LD50(oral, rat): 4300mg/kg(AMIHAB 14,387,1956) LD50(oral, rat): 3500mg/kg(CaPSAR, 1993) LD50(skin, rabbit): >4350mg/kg(IUCLID 2000) LC50(ihl, rat): 5000ppm/4H(NPIRI* 1,123,1974)
	SKIN CORROSION/ SKIN IRRITATION	Rabbit; 5mg/24H; Severe(28ZPZK -, 24,1972) Rabbit; ; Moderate(CERI NITE hazard report No.62, 2004)
	EYE DAMAGE/ EYE IRRITATION	Rabbit; 2mg/24H; Severe(85JCAE -, 25, 1986) Rabbit; ; Moderate(EHC 150,1993: NICNAS, 2001)



	RESPIRATORY SENSITIZATION	No data
	SKIN SENSITIZATION	No data
	CARCINOGENICITY	IARC: Group 3 OSHA: No data ACGIH: A4 NTP: No data EU CLP: No data
	GERM CELL MUTAGENICITY	No data
	TOXIC TO REPRODUCTION	TCLo(ihl,rat): 250mg/m <sup>3</sup> /24H(female 7-15 D preg)(ATSUDG 8,425,1985)
	SPECIFIC TARGET ORGAN TOXICITY SINGLE EXPOSURE	Human; irritation of throat, severe congested lung, hemorrhage of pulmonary alveolus, pulmonary edema, hemorrhage in liver, vacuolization of liver cell, damage of neuron, cyanosis of limbs, hepatopathy, severe renal disorder, amnesia, coma(CERI NITE hazard report No.62, 2004) Animal; deep anesthetic action(EHC 190, 1997)
	SPECIFIC TARGET ORGAN TOXICITY REPEATED EXPOSURE	Human; irritation of eye and nose, thirsty(DFGOT vol 15,2001) Human; chronic headache, chest pain, abnormal brain wave, dyspnea, cyanosis of hand, pyrexia, hypoleukocytosis, unpleasantness, inadequate pulmonary function, physical disability, mental disease(CERI NITE hazard report No.62, 2004)
	ASPIRATION HAZARD	Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis.

## 12. ECOLOGICAL INFORMATION

ECOTOXICITY	TO FISH	LD50(gold fish): 13mg/L/24hr LC50(rainbow trout): 3.3mg/L/96hr (CERI NITE hazard report 2005)
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	TO CRUSTACEA	LC50 190mg/L/96hr (KOSHA)
	TO OTHER AQUATIC LIFE	No data
PERSISTENCE/ DEGRADABILITY	PERSISTENCE	No data
	DEGRADABILITY	No data
BIOACCUMULATION POTENTIAL	ACCUMULATION	No data
	BIODEGRADABILITY	39 % (CERI hazard datasheet))
MOBILITY IN SOIL		log Kow = 3.12(ortho-), 3.2(meta-), 3.15(para-) (SRC)
OTHER ADVERSE EFFECTS		No data

### 13. DISPOSAL CONSIDERATION

DISPOSAL METHODS	Use only licensed transporters and permitted facilities for waste disposal.
DISPOSAL CONSIDERATIONS	Dispose of this material and its container in accordance with local/regional/national/international regulation.

### 14. TRANSPORT INFORMATION

IATA	
UN NUMBER	1307
UN PROPER SHIPPING NAME	XYLENES
TRANSPORT HAZARD CLASS	3
PACKING GROUP	2
MARINE POLLUTANT	No data
SPECIAL PRECAUTIONS FOR USER	
IN CASE OF FIRE	F – E
IN CASE OF LEAK	S - D

### 15. REGULATORY INFORMATION

Occupational Safety and Health Act	Substance Requiring Working Environment Measurement (period : 6 month) Hazardous Substance Requiring Management
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		Substance Requiring Exposure Standards
	Toxic Chemicals Control Act	Listed
	Safety Control of Dangerous Substance Act	4-II ; 1,000L
	Wastes Control Act	Controlled Waste
	Persistent Organic Pollutants Control Act	Not listed
US REGULATIONS	OSHA	Not listed
	CERCLA	45.3599 kg 100 lb
	EPCRA302	Not listed
	EPCRA304	Not listed
	EPCRA313	Listed
	ROTTERDAM CONVENTION	Not listed
	STOCKHOLM CONVENTION	Not listed
	MONTREAL PROTOCOL	Not listed
EU CLASSIFICATION INFORMATION	CLASSIFICATION	R10 Xn; R20/21 Xi; R38
	RISK PHRASES	R10, R20/21, R38
	SAFETY PHRASES	S2, S25

## 15. OTHER INFORMATION

REFERENCES AND SOURCES FOR DATA	Korea Occupational Safety & Health Agency Wako Corporation Sigma Aldrich Corporation
ORIGINATED DATE	
REVISION NUMBER AND DATE	
OTHER	The information in this MSDS is based on several references and the present state of our knowledge. However, the MSDS dose not always cover all information about product. The information in this MSDS is only provision of information, and It does not represent any guarantee of the properties of the product.