



Material Safety Data Sheet (MSDS)

Product	Mixed-Xylene		
CAS No.	RTECS No.	UN No.	EC No.
1330-20-7	ZE2100000	1307	215-535-7
Date of preparation of the first version		Date of preparation of the latest version	
2008-07-25		2012-06-05	

1. Chemical Product and Company Information

1) Product

Mixed Xylene

(Synonyms : Xylene, solvent xylene, dimethylbenzene, Mixed Aromatic Hydrocarbons)

2) Recommended use of the chemical and restrictions on use

Recommended use : organic solvent, raw material of petrochemicals

Restrictions on use : No data

3) Manufacture/Supplier information

Supply company : GS Caltex Corporation

Address : 679 Yoksam-dong, Kangnam-gu, Seoul, Korea

Information service or emergency call : 1544-5151

Department in charge : The customer service center

4) AU Importer

Company name : Synergy Building Supplies

Address : 236 PLANET ST WELSHPOOL WA 6106

Emergency telephone number : 1300 655 853

2. Hazards Identification

1) Classification of the substance or mixture

Flammable liquid category 3

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, Category 3 (narcotism)

Specific target organ systemic toxicity (repeated exposure) category 1

Aspiration hazard category 2

Hazardous to the aquatic environment—chronic hazard category 2

2) GHS labels, including precautionary statements

Symbol



Signal word : Danger

Hazard statement

H226	Flammable liquid and vapour
H305	May be harmful if swallowed and enters airways
H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H360	May damage fertility or the unborn child
H370	Cause damage to organs
H372	Causes damage to organs through prolonged or repeated exposure
H411	Toxic to aquatic life with long lasting effects

Precautionary statement

– Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood
P210	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P233	Keep container tightly closed
P242	Use only non-sparking tools
P243	Take precautionary measures against static discharge
P260	Do not breathe dust/fume/gas/mist/vapours/spray
P261	Avoid breathing dust/fume/gas/mist/vapors/spray
P264	Wash thoroughly after handling
P270	Do not eat, drink or smoke when using this product
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

P310	Immediately call a POISON CENTER or doctor/physician
P312	Call a POISON CENTER or doctor/physician
P314	Call a POISON CENTER or doctor/physician if you feel unwell
P321	Specific treatment (see on this label)
P331	DO NOT induce vomiting

P362	Take off contaminated clothing and wash before reuse
P391	Collect spillage
P301+P310	IF SWALLOWED :Immediately call a POISON CENTER or doctor/physician
P302+P352	If on skin: Wash with plenty of soap and water
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P308+P313	IF exposed or concerned: Get medical advice/attention
P309+P311	If exposed or if you feel unwell : Call a POISON CENTER or doctor/physician
P332+P313	If skin irritation occurs: Get medical advice/attention
P337+P313	If eye irritation persists: Get medical advice/attention
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P370+P378	In case of fire: Use Dry chemicals, CO2, water spray for extinction
- Storage	
P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
- Disposal	
P501	Dispose of contents/ container in accordance with regulation.

3) Other hazards which do not result in classification

○ NFPA

- Health	2
- Fire	3
- Reactivity	0

3. Composition and Information on Ingredients

Component	Synonyms	CAS No.	Content(vol.%)
m-Xylene	m-dimethylbenzene	108-38-3	35~55%
o-Xylene	o-dimethylbenzene	95-47-6	15~30%
p-Xylene	1,4-methylbenzene	106-42-3	12~45%
Ethylbenzene	OHSND919	100-41-4	10~35%

4. First Aid Measures

1) Eye contact

Wash eyes thoroughly with plenty of water for at least 15 minutes.
Seek medical attention immediately.

2) Skin contact

Wash contaminated area perfectly with soap and water for at least 15 minutes during removing contaminated clothes and shoes.

If necessary, seek medical attention immediately.

3) Inhalation

If there is side effect, remove person to fresh air from the exposure area.

If person is not breathing, provide artificial respiration.

Seek medical attention immediately.

4) Ingestion

Inhalation hazards

Avoid vomiting.

In case of vomiting, the location of the head should be lower than that of the hips to prevent blocking of the respiratory tract.

Seek medical attention immediately.

If person is not breathing, provide artificial respiration.

5) Most important symptoms/effects, acute and delayed

Inhalation

Short-term effect : Irritation, low body temperature or fever, nausea, vomiting, stomachache, chest pain, labored respiration, headache, drowsiness, dizziness, disorientation, dysphonia, emotion change, thrill, modulation loss, eyesight disturbance, pulmonary congestion, kidney damage, liver damage, coma

Long-term effect : Nasal bleeding, low body temperature or fever, nausea, vomiting, stomachache, anorexia, chest pain, labored respiration, irregular cardiac impulse, headache, drowsiness, fatigue, dizziness, disorientation, sleep disorder, emotion disorder, emotion change, thrill, modulation loss, eyesight disturbance, menstrual disorder, infertility, pulmonary congestion, internal bleeding, blood disorder, heart disorder, kidney damage, liver damage, reproduction system disorder, coma

Skin contact

Short-term effect : Irritation

Long-term effect : Irritation

Eyes contact

Short-term effect : Irritation(There is a severe case.), sensitivity to light

Long-term effect : Irritation, eyesight disturbance, eyes damage

Ingestion

Short-term effect : Irritation, low body temperature or fever, nausea, vomiting, stomachache, chest pain, labored respiration, headache, drowsiness, dizziness, disorientation, dysphonia, emotion change, thrill, modulation loss, eyesight disturbance, pulmonary congestion, kidney damage, liver damage, coma, inhalation hazards

Long-term effect : No data

6) First-aid treatment and information on medical doctors

In case of inhalation, consider the oxygen injection.

In case of ingestion, consider gastrolavage and activated carbon slurry injection.

5. Fire Fighting Measures

1) Recommended(or prohibited) extinguishing media

- Recommended extinguishing media : Dry chemicals, CO₂, water spray, fire fighting foam
- Prohibited extinguishing media : No data
- Large fire : fire fighting foam or water spray

2) Specific hazard from chemical material

- Toxicant from combustion : Carbon oxides
- Fire and Explosion Hazards: There is the severe fire hazard.
Vapor is heavier than air.
Vapor or gas may ignite from long distances ignition source and quickly diffuse.
The mixture of vapor and air may cause explosion over the flash point.
Material flowing or mixing may cause the static electricity that may be ignition or explosion sources.

3) Extinguishment

If it is not dangerous, remove containers from fire areas.

Even if the fire is suppressed, continuously spray water to the heated containers.

Avoid accessing to the both ends of the tank.

For fire in the storage area, spray water using unmanned hose supports or monitor nozzles to the heated containers to cool them. If it is not possible, escape from the fire area.

Immediately escape from the fire area if there is noise from the safe exhaust system and color change of the tank caused by fire.

Escape radius for tank, train, tank truck: 0.8km(0.5mile)

The efficiency of water may be low.

6. Accidental Release Measures

1) Necessary actions to protect human health

Avoid heat, flame, spark, and other ignition sources.

If there are methods to stop release safely, do so.

Spray water to reduce vapors.

2) Necessary actions to protect the environment

- Air : Spray water and remove vapors
Stand against the wind and avoid lower zone.
Make swamps or ponds to hold spills.
- Soil : Make hills for further treatment.
Absorb spills with sand and other non-combustible materials.
Collect spills with proper containers using absorbents.

Cover spills using absorbent sheet, pad, or cushion to avoid the spills diffusion.

Neutralize

Collect spills with proper containers using absorbents.

○ Water :

Absorb with activated carbon.

Use suction hose to remove the spills surrounded.

Collect spills using machines.

3) Purification and removal methods

○ Small leak : Absorb the material spilled with sand or other noncombustible absorbing substances.

Collect spills with proper containers to treat them.

Make hills for further treatment.

Remove all ignition sources.

○ Large leak :

Only authorized person can access to the hazardous and restricted areas.

Notice to central and local governments for the exposure more than or equal to the limits.

7. Handling and Storage

1) Safety handling

No data

2) Storage

Storage and handle according to current regulation and rules.

Avoid human body damage.

Containers should be closed.

Storage outdoor or isolated buildings.

Storage with flammable materials.

Storage in cool and dry areas.

U.S. OSHA 29 CFR 1910. 106. Ground is necessary.

Keep away from prohibited materials for mixing.

8. Exposure Control and Personal Protection

1) Exposure limits and biological exposure limits of chemical

(o-,m-,p- Xylene)

○ MOL : TWA : 100ppm (435mg/m³), STEL : 150ppm (655mg/m³)

○ OSHA : TWA : 100ppm (435mg/m³)

○ NIOSH : TWA : 100ppm (435mg/m³) – 4hr, STEL : 150ppm (655mg/m³)

○ ACGIH : TWA : 100ppm (435mg/m³), STEL : 150ppm (655mg/m³)

○ DEG MAK : 440mg/m³

○ Biological exposure limits : Methylhippuric acids in urine(end of shift) : 1.5 g/g creatinine

(Ethylbenzene)

○ MOL : TWA : 100ppm (435mg/m³), STEL : 125ppm (545mg/m³)

- OSHA : TWA : 100ppm (435mg/m³)
- NIOSH : TWA : 100ppm (435mg/m³)– 10hr , STEL : 125ppm (545mg/m³)
- ACGIH : TWA : 100ppm, STEL : 125ppm
- Biological exposure limits : No data

2) Engineering management

Ventilation equipment should be explosion–proof if explosive concentrations of dust, vapor or fume are present.

Install local ventilation system.

Comply with limits.

3) Personal protection equipment

- Respiratory protection

Use respiratory protection equipment attached the “S” mark of KOSHA, Korea.

U.S. NIOSH and OSHA prepared the following respiratory protection equipment and maximum use concentration.

900ppm

Small anti–poison mask (direct connection type, organic gas cartridge)

Electric fan attachment respirator (organic gas cartridge)

Supplied–air respirator

Air respirator (full facepiece)

Escape

Air filtration type respirator (organic gas cartridge and full facepiece)

Air respirator (escape type)

Unknown concentration or emergency

Air respirator (full facepiece)

Supplied–air respirator (complex airline mask)

- Eyes protection

Safety glasses or goggles are recommended for the eyes protection from dusts or mists.

A business proprietor should install eyes washing facilities near working areas to protect worker’s eyes for emergency.

- Hands protection

Use proper chemical resistant gloves.

- Human body protection

Use proper chemical resistant clothes.

9. Physical and Chemical Properties

1) Appearance	Colorless liquid colorless crystalline solid
2) Odor	Smell
3) Odor threshold	0.2~2ppm
4) pH	No data
5) Melting point/freezing point	–25°C (o–), –47°C (m–), –13.4°C (p–)
6) Initial boiling point or boiling range	144°C (o–), 139°C (m–), 138°C (p–)

7) Flash point	32°C(o-), 27°C(m-), 27°C(p-)
8) Evaporation rate (BuAc=1)	No data
9) Flammability(solid, gas)	Not determined
10) Upper/lower flammability or explosive limits	6.7/0.9%(o-), 7.0/1.1%(m-), 7.0/1.1%(p-)
11) Vapor pressure	0.7kPa(o-), 0.8kPa(m-), 0.9kPa(p-) @ 20°C
12) Solubility	178mg/L(o-), 162mg/L(m-), 198mg/L(p-)
13) Vapor density	3.7
14) Relative density	0.865~0.875
15) Partition coefficient: n-octano/water	3.12(o-), 3.2(m-), 3.15(p-)
16) Auto-ignition temperature	463°C(o-), 527°C(m-), 527°C(p-)
17) Decomposition temperature	No data
18) Viscosity	No data
19) Molecular weight	106.17

10. Stability and Reactivity

1) Chemical stability

Stable at room temperature and pressure

2) Toxicant generation possibility during reaction

Toxic carbon compounds may generate during thermal decomposition.

3) Prohibited conditions

Avoid heat, sparks, open flames and other ignition sources

If containers are exposed to heat, container damage or explosion may occur.

Keep away from water supply facilities and sewage.

Prohibited materials for mixing: combustible materials, acids, oxidizing agent

4) Prohibited materials

combustible materials, acids, amine, oxidizing agent

5) Toxicant during decomposition

○ Toxicant from combustion : Carbon oxides

11. Toxicological Information

1) Information on the likely routes of exposure

- Inhalation : Irritation, low body temperature or fever, nausea, vomiting, stomachache, chest pain, labored respiration, headache, drowsiness, dizziness, disorientation, dysphonia, emotion change, thrill, modulation loss, eyesight disturbance, pulmonary congestion, kidney damage, liver damage, coma, Nasal bleeding, anorexia, irregular cardiac impulse, headache, drowsiness, fatigue, , sleep disorder, emotion disorder, menstrual disorder, infertility, blood disorder, heart disorder, reproduction system disorder
- Ingestion : Irritation, low body temperature or fever, nausea, vomiting, stomachache, chest pain, labored respiration, headache, drowsiness, dizziness, disorientation, dysphonia, emotion change, thrill, modulation loss, eyesight disturbance, pulmonary congestion, kidney damage, liver damage, coma, inhalation hazards
- Skin contact : Irritation
- Eye contact : Irritation

2) Delayed and immediate effects and chronic effects from short or long term exposure

- Acute oral toxicity
 - Oral :
 - o-Xylene- LDLo(rat) : 5000mg/kg
 - m-Xylene- LD50(rat) : 5000mg/kg
 - p-Xylene- LD50(rat) : 5000mg/kg
 - Ethylbenzene- LD50(rat) : 3500mg/kg
 - Dermal :
 - m-Xylene- LD50(rabbit) : 14100uL/kg
 - Ethylbenzene- LD50(rabbit) : 17.8mL/kg
 - Inhalation :
 - o-Xylene- LCLo(rat) : 6125ppm/12h
 - m-Xylene- LCLo(rat) : 8000ppm/4h
 - p-Xylene- LC50(rat) : 4550ppm/4h
 - Ethylbenzene- LCLo(rat) : 4000ppm/4h
- Skin corrosion/irritation : moderately irritating
- Serious eye damage/eye irritation : slightly irritating
- Respiratory sensitization : No data
- Skin sensitization : No data
- Carcinogenicity : ACGIH Group A3, IARC Group 3
- Germ cell mutagenicity :
 - Human genetic effect epidemiology
 - Negative, Somatic cell in vivo Metagenic
 - Effect test(micro-nucleus test·
 - Chromosome test) Negative.
- Reproductive toxicity :
 - We have a mouse's teratogenic test result,
 - and it has effects on fetus while its
 - mother's toxicity level isn't high enough to
 - show

Specific target organ systemic toxicity(single exposure)
:

To humans, it shows severe pulmonary congestion, alveolus and pulmonary edema, lobule centered vacuolization of interstitial cell, which causes liver enlargement, punctate hemorrhage and enlargement or damage to neurons, increase in blood urea elements, liver and severe kidney disturbance, amnesia, and coma. Tested animal showed symptom of anesthesia.

Specific target organ systemic toxicity(repeated exposure) :

It might cause the followings to humans: stimulation in nasal area, severe thirst, chronic headache, precordialgia, brainwave disorder, dyspnoea, fever, decrease in the number of leukocyte, displeasure, lowering of lung function and labor ability, somatization or mental disorder. Target organ might cause effects on nervous system.

Aspiration hazard :

If swallowed, it has danger of causing chemical pneumonitis.

3) Numerical measures of toxicity(such as ATE)

No data

12. Ecological Information

1) Hazardous to the aquatic environment

- Fish : p-xylene: LC50-2.0mg/L/96h, 8.8mg/L/96h, m-xylene: LC50-16mg/L/96h
- Crustacea : p-xylene: EC50-4.73mg/L/48h, m-xylene: EC50-3.53mg/L/48h
- Algae : p-xylene: EC50-3.2mg/L/72h, m-xylene: EC50-4.9mg/L/72
<Chronic toxicity> algae: EC50-72mg/L/14day

2) Persistence and degradability

- Persistence : No data
- Degradability : o-xylene: 33mg/day, m-xylene: 47mg/day, p-xylene: 55mg/day

3) Bioaccumulative potential

- Biodegradability : No data
- Bioaccumulation : 39%

4) Mobility in soil

No data

5) Other adverse effects

No data

13. Disposal Considerations

1) Disposal methods

Dispose according to the related regulations.

2) Disposal cautions

Follow details of the related waste management act.

14. Transport Information

1) UN number

1307

2) UN Proper Shipping Name

XYLENES

3) Transport hazard classes

3

4) Packing group, if applicable

2

5) Environmental hazards

Not determined

6) Special precautions for user

Emergency management type of fire : F-E

Eemergency management type of leak : S-D

15. Regulatory Information

1) Industrial safety and health act (Korea)

Harmful substance subject to management, Threshold limit values, Occupation environment measurement material, Special health examination material

2) Toxic chemical substance subject to management act (Korea)

Not determined

3) Wastes control act (Korea)

4 group 2 petroleum 1000ℓ

4) Hazardous material safety act (Korea)

designated waste

5) Other internal and foreign acts

- Persistent organic pollutant control act (Korea) : Not determined
- EC classification
 - Classification : Xn , Xi
 - Risk Phrases : R10, R20/21, R38
 - Safety Phrases : S2, S25
- U.S. acts
 - OSHA (29CFR1910.119) : Not determined
 - CERCLA 103 (40CFR302.4) : XYLENE: 100 LBS RQ
 - EPCRA 302 (40CFR355.30) : Not determined
 - EPCRA 304 (40CFR355.40) : Not determined
 - EPCRA 313 (40CFR372.65) : Determined
- SARA toxicity, SARA 311/312 (40 CFR 370.21) : Acute toxicity: Yes, Chronic toxicity: No, Fire risk: Yes, Reaction risk: No, Rapid spouting risk: No
- U.S.TSCA :
 - TSCA : listed in the inventory
 - TSCA 12(b) : Not listed in the inventory

16. Other Information

1) References

UN RTDG Recommendations on the TRANSPORT OF DANGEROUS GOODS
International Chemical Safety Cards(ICSC)(<http://www.nihs.go.jp/ICSC>)
ECB-ESIS(European chemical Substances Information System)(<http://ecb.jrc.it/esis>)
ECOTOX Database, EPA(<http://cfpub.epa.gov/ecotox>)
National Institute of Environmental Research(NIER) (<http://ncis.nier.go.kr>)
National Emergency Management (<http://hazmat.nema.go.kr>)
IUCLID Dataset (1330207 pdf)
KOSHA Material Safety Data Sheet

2) Date of preparation of the first version of the SDS

2008-07-25

3) Revised frequency and Date of preparation of the latest version of the SDS

2010-02-01(1 version)

2012-06-5(2 version) : Change of ACGIH Group

Change of Toxic chemical substance subject to management act

4) Others

ACGIH: American Conference of Governmental Industrial Hygienists(www.acgih.org)

AIHA : American Industrial Hygiene Association

ANSI : American National Standards Institute

API: American Petroleum Institute

CERCLA: Comprehensive Emergency Response, Compensation, and Liability Act

DOT: U.S. Department of Transportation

EPA: US Environmental Protection Agency(www.epa.gov)

HMIS: Hazardous Materials Identification System

IARC: International Agency for Research on Cancer

KOSHA Korea Occupational Safety and Health Agency (www.kosha.net)

NFPA: National Fire Protection Association

N/A: Not Applicable

NIOSH: National Institute for Occupational Safety and Health

NTP: National Toxicology Program

LC50: Lethal Concentration, 50 Percent

LD50: Lethal Dose, 50 Percent

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

OPA: Oil Pollution Act of 1990

OSHA :U.S. Occupational Safety & Health Administration

PEL: Permissible Exposure Limit (OSHA)

REL: Recommended Exposure Limit (NIOSH)

RCRA: Resource Conservation and Recovery Act

RTECS: Registry of Toxic Effects of Chemical Substances(<http://www.cdc.gov/niosh/rtecs/>)

STEL Short-Term Exposure Limit (generally 15 minutes)

SARA: Superfund Amendments and Reauthorization Act of 1986 Title III

SPCC: Spill Prevention, Control, and Countermeasures

TLV: Threshold Limit Value (ACGIH)

TSCA: Toxic Substances Control Act

TWA: Time Weighted Average (8 hr.)

WHMIS: Workplace Hazardous Materials Information System (Canada)(<http://www.whmis.net/>)

WEEL: Workplace Environmental Exposure Level (AIHA)

MOL: Ministry of Labor, Korea