

SDS(Safety Data Sheet)

Product	Para-Xylene		
MSDS Number	List No.	Issuing date	Last revised date
-	AR0004	2008-07-25	2024-01-17

1. IDENTIFICATION

1) Product name

Para-Xylene

2) Recommended use of the chemical and restriction on use

- Recommended use Others
기타
- Restrictions on use Do not use for any other purpose.

3) Details of the supplier of the safety data sheet

○ Manufacturer

- Company name GS Caltex Corporation
- Address GS Tower, 508, Nonhyeon-ro, Gangnam-gu, Seoul, Korea
- Emergency telephone number 1544-5151

2. HAZARDS IDENTIFICATION

1) Classification of the product

- FLAMMABLE LIQUIDS : Category 3
- ACUTE TOXICITY(Dermal) : Category 4
- ACUTE TOXICITY(Inhalation:Vapours) : Category 4
- SKIN CORROSION/IRRITATION : Category 2
- SERIOUS EYE DAMAGE/EYE IRRITATION : Category 2
- SPECIFIC TARGET ORGAN TOXICITY FOLLOWING SINGLE EXPOSURE : Category 3(Narcotic effects)
- SPECIFIC TARGET ORGAN TOXICITY FOLLOWING REPEATED EXPOSURE : Category 1

2) Label elements

○ Hazard pictograms



○ Signal word

Danger

○ Hazard statements

- H226 Flammable liquid and vapour.
- H312 Harmful in contact with skin.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.

- H332 Harmful if inhaled.
- H336 May cause drowsiness or dizziness.
- H372 Causes damage to organs through prolonged or repeated exposure. (inhalation)

○ **Precautionary statements**

1) Prevention

- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P233 Keep container tightly closed.
- P240 Ground and bond container and receiving equipment.
- P241 Use explosion-proof [electrical/ventilating/lighting] equipment.
- P242 Use 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/vapours/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.
- P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

2) Response

- P302 + P352 IF ON SKIN: Wash with plenty of water/cleansing agent.
- P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P314 Get medical advice/attention if you feel unwell.
- P321 Specific treatment (see section 5).
- P332 + P313 If skin irritation occurs: Get medical advice/attention.
- P337 + P313 If eye irritation persists: Get medical advice/attention.
- P362 + P364 Take off contaminated clothing and wash it before reuse.
- P370 + P378 In case of fire: Use manufacturer/supplier or the competent authority to specify appropriate media for extinction.

3) Storage

- P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
- P403 + P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container to

3) Other hazards

○ **Product NFPA Level**

(※ 0-Lack, 1-Low, 2-Moderate, 3-High, 4-Very High)

Product name	Health	Flammable	Reaction
Para-Xylene	2	0	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	Trade names and Synonyms	CAS No.	EC No.	Contain Ratio(%)
p-Xylene	.para.-Xylene ; 1,4-DIMETHYLBENZENE ; 1,4-Dimethylbenzene	106-42-3	203-396-5	99.7 ~ 100
Ethylbenzene	Ethyl benzene ; Ethylbenzol ; Phenylethane	100-41-4	202-849-4	0 ~ 0.1
m-xylene	; .meta.-Xylene ; 1,3-DIMETHYLBENZENE	108-38-3	203-576-3	0 ~ 0.1
o-Xylene	1,2-Dimethylbenzene ; 1,2-Dimethylbenzene ; 1,2-Xylene	95-47-6	202-422-2	0 ~ 0.1

4. FIRST AID MEASURES

1) Eye contact

- Get medical attention immediately.
- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes.
- 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.

2) Skin contact

- In case of contact with substance, immediately flush skin with running water for at least 20 minutes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Immediately call a POISON CENTER or doctor/physician.
- If skin irritation occurs: Get medical advice/attention.
- Take off immediately all contaminated clothing and wash it before reuse.

3) Inhalation

- If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.
- Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
- IF exposed or concerned: Get medical advice/attention.

4) Ingestion

- Do not use mouth-to-mouth method if victim ingested the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

5) Indication of any immediate medical

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

attention and special
treatment needed

5. FIRE FIGHTING MEASURES

- 1) Suitable (and unsuitable) extinguishing media**
- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
 - Use dry sand or earth to smother fire.
 - For mixtures containing alcohol or polar solvent: Alcohol-resistant foam
 - Direct water (Unsuitable extinguishing media)
- 2) Special hazards arising from the substance or mixture**
- Can form explosive mixtures at temperatures at or above the flashpoint.
 - Fire may produce irritating, corrosive and/or toxic gases.
 - Flammable liquid and vapour.
 - Heating may cause a fire or explosion.
- 3) Special protective equipment and precautions for firefighters**
- Rescuers should put on appropriate protective gear.
 - Fire involving Tanks: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
 - In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
 - Eliminate all ignition sources if safe to do so.

6. ACCIDENTAL RELEASE MEASURES

- 1) Health considerations and protective equipment**
- Clean up spills immediately, observing precautions in Protective Equipment section.
 - ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
 - All equipment used when handling the product must be grounded.
 - Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
 - Please note that materials and conditions to be avoided.
- 2) Environmental precautions**
- Large spill: Prevent entry into waterways, sewers, basements or confined areas.
- 3) Methods and material for containment and cleaning up**
- Dike and collect water used to fight fire.
 - Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
 - Reduce airborne dust and prevent scattering by moistening with water.
 - Absorb the liquid and scrub the area with detergent and water.
 - Large Spill: Dike far ahead of liquid spill for later disposal.

7. HANDLING AND STORAGE

- 1) Precautions for safe handling**
- Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition.
 - Follow all MSDS/label precautions even after container is emptied because they may

retain product residues.

- Avoid prolonged or repeated contact with skin.
- Avoid breathing vapors from heated material.
- All equipment used when handling the product must be grounded.
- Please note that materials and conditions to be avoided.
- Handling refer to engineering control/personal protection section.
- Wash thoroughly after handling.
- Use only outdoors or in a well-ventilated area.

2) Conditions for safe storage (including any incompatibilities)

- Please note that materials and conditions to be avoided.
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Store in a well-ventilated place. Keep container tightly closed.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

1) Control parameters

Chemical name	Exposure limits	ACGIH TLV	OSHA PEL	Biological limit values(BLV)
p-Xylene	TWA : 100 ppm STEL : 150 ppm	Not available	Not available	1.5 g/g creatinine Medium: urine Time: end of shift Parameter: Methylhippuric acids
Ethylbenzene	TWA : 100 ppm STEL : 125 ppm	Not available	PEL: 100 ppm	0.15 g/g creatinine Medium: urine Time: end of shift Parameter: Sum of mandelic acid and phenylglyoxylic acid (nonspecific)

m-xylene	TWA : 100 ppm STEL : 150 ppm	Not available	Not available	1.5 g/g creatinine Medium: urine Time: end of shift Parameter: Methylhippuric acids
o-Xylene	TWA : 100 ppm STEL : 150 ppm	Not available	Not available	1.5 g/g creatinine Medium: urine Time: end of shift Parameter: Methylhippuric acids

2) Appropriate engineering controls

- Install local exhaust ventilation system.
- Check legal suitability of exposure level.

3) Personal protection equipment

- **Respiratory protection** - If exposure concentration of the material is lower than 100 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate material ; such
 - If exposure concentration of the particle material is lower than 250 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate material
 - If exposure concentration of the particle material is lower than 500 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate materia
 - If exposure concentration of the particle material is lower than 10000 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate mater
 - If exposure concentration of the material is lower than 100000 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate material ; su
 - If exposure concentration of the material exceeds the permitted exposure standards, Wear European Standard EN 149 approved full or half face piece (with goggles) respiratory protective equipment.
- **Eye protection**
 - An eye wash unit and safety shower station should be available nearby work place.
 - Wear breathable safety goggles to protect from vapour state organic material

causing eye irritation or other disorder.

- **Hand protection** - Wear appropriate protective gloves by considering physical and chemical properties of chemicals.
- **Body protection** - Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Item	Input Value
Appearance	Liquid
Color	No Data
Smell	달콤한 냄새
Smell Threshold	No Data
pH (Numerical value)	No Data
Melting/Freezing Point	13.2 °C
Boiling Point	No Data
Flash Point	27.7 °C
Evaporating Rate	0.1
Flammability(Solid, Gas)	No Data
Explosibility Range	7/1.1 %
Steam Pressure	405.03 mmHg(at 20°C)
Solubility	No Data
Vapor Density	3.7
Specific Gravity	0.86105 @25°C
Distribution Coefficient	3.15
Selfignition Temperature	528
Pyrolysis Temperature	No Data
Viscosity	No Data
Molecular Weight	106.16

10. STABILITY AND REACTIVITY

- 1) Chemical Stability and hazardous reactivity**
 - Can form explosive mixtures at temperatures at or above the flashpoint.
 - HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
 - Fire may produce irritating, corrosive and/or toxic gases.
- 2) Conditions to avoid**
 - Ignition source(heat, spark, flame, friction, shock, contamination)

3) **Incompatible materials** - Combustibles

4) **Hazardous decomposition products** - During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

11. TOXICOLOGICAL INFORMATION

1) Information on the likely routes of exposures

Inhalation

- Harmful if inhaled.
- Absorbable through the inhalation

Skin contact

- Harmful in contact with skin.
- Causes skin irritation.
- Absorbable through the skin

Eye contact

- Causes serious eye irritation.
- Possible exposure through the eye

Ingestion

- No ingestion effect through mouth.

2) Health hazard information

Acute toxicity

*** Oral - Not classified (ATEmix > 2000 mg/kg)**

- p-Xylene : LD50(rat, male)=3,523 mg/kg bw (mixed isomers: 60.2% m-xylene, 13.6% p-xylene, 9.1% o-xylene, and 17.0% ethylbenzene) (EU Method B.1) (ECHA)
- Ethylbenzene : rat(male/female); LD50 = ca. 3500 mg/kg (ECHA)
- m-xylene : rat(female); LD50 > 4000 mg/kg bw (EU Method B.1) (ECHA)
- o-Xylene : rat(female); LD50 > 4000 mg/kg bw (EU Method B.1) (ECHA)

*** Dermal - Category 4 (ATEmix = 0)**

- p-Xylene : rabbit(male); LD50 = 12126 mg/kg (read across: m-xylene) (ECHA)
- Ethylbenzene : rabbit(male); LD50 = ca. 15433 mg/kg (ECHA)
- m-xylene : rabbit; LD50 = 12126 mg/kg (ECHA)
- o-Xylene : rabbit; LD50 = 12126 mg/kg (ECHA)

*** Inhalation(Gas) - Not applicable**

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

*** Inhalation(Vapour) - Category 4 (ATEmix = 19.77 mg/L)**

- p-Xylene : 4h-LC50(rat)=4,550 ppm(unit conversion: 4h-LC50(rat)=19.71 mg/L (HSDB)
- Ethylbenzene : rat(male); inhalation: vapour; LC50 = 17.8 mg/L air /4h (ECHA)
- m-xylene : rat; inhalation: vapour; LC50 = 27.124 mg/L air/4h (EPA OPP 81-3, GLP) (ECHA)
- o-Xylene : rat; inhalation: vapour; LC50 = 27.124 mg/L air/4h (EPA OPP 81-3, GLP) (ECHA)

*** Inhalation(Dust, mist) - Not classified (ATEmix > 5 mg/L)**

- p-Xylene : Not available
- Ethylbenzene : Not available
- m-xylene : Not available
- o-Xylene : Not available

○ **Skin corrosion/Irritation : Category 2 (SKIN IRRITATION Cat.2)**

- p-Xylene : The skin corrosion potential was determined by exposing the intact skin of six rabbits to p-xylene for four hours. The sites of application were not destroyed or changed irreversibly during or after the exposure. CHEVRON PARAXYLENE 99% was considered not to be corrosive to the intact skin of rabbits. primary dermal irritation index (PDII) : 3 (EU Method B.4) (ECHA)
- Ethylbenzene : rabbit; moderately irritating (ECHA)
- m-xylene : rabbit; moderately irritating; not corrosive (EU Method B.4) (ECHA)
- o-Xylene : rabbit; moderately irritating; not corrosive (EU Method B.4) (ECHA)

○ **Serious eye damage/irritation : Category 2 (EYE IRRITATION Cat. 2)**

- p-Xylene : The available data indicate that mixed xylene and the individual isomers (m-, o- and p-xylene) should be considered to be irritating to skin, eyes and the respiratory tract. : induces serious eye irritation. (ECHA)
- Ethylbenzene : rabbit; non irritating (conjunctivae score = 0) (ECHA)
- m-xylene : rabbit; not irritating (ECHA)
- o-Xylene : rabbit; not irritating (ECHA)

○ **Respiratory sensitization : Not classified**

- p-Xylene : Not available
- Ethylbenzene : Not available
- m-xylene : Not available
- o-Xylene : Not available

○ **Skin sensitization : Not classified**

- p-Xylene : Xylene isomers (including mixed xylenes) are unreactive chemicals that would not be identified on the basis of chemical structure as being potential skin sensitizers. In addition, there is no clinical evidence demonstrating that xylenes cause skin sensitization in humans, even when tested in a very rigorous human predictive assay. Therefore, xylene isomers (including mixed xylenes) do not warrant classification as having a potential to cause skin sensitization under CLP. (OECD TG 429) (ECHA)
- Ethylbenzene : Not available
- m-xylene : mouse; not sensitising (OECD TG 429) (ECHA)
- o-Xylene : mouse; not sensitising (OECD TG 429) (ECHA)

○ **Carcinogenicity : Not classified**

- p-Xylene : The key chronic study was conducted by NTP (1986). The study comprises the oral gavage administration of mixed xylenes(60.2% m-xylene, 13.6% p-xylene, 9.1% o-xylene, and 17% ethylbenzene) to rats (0, 250, or 500 mg/kg/day) and mice (0, 500 or 1000 mg/kg/day) for 5 days/week for 103 weeks. There was no evidence of carcinogenicity. No studies are available regarding cancer in animals exposed via inhalation to mixed xylene or the individual xylene isomers. (EU

Method B.32) (ECHA)

IARC, OSHA, NTP, IRIS, ACGIH, EU CLP 1272/2008 : not listed

ACGIH: A4

- Ethylbenzene : IARC : Group 2B (Possibly Carcinogenic to Humans)
US EPA IRIS : D (Not classifiable as to human carcinogenicity)
ACGIH : A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)
- m-xylene : IARC : Group 3 (Not Classifiable)
ACGIH : A4 (Not Classifiable as a Human Carcinogen)
- o-Xylene : IARC : Group 3 (Not Classifiable)
ACGIH : A4 (Not Classifiable as a Human Carcinogen)

○ **Germ cell mutagenicity : Not classified**

- p-Xylene : In vitro Bacterial Reverse Mutation Assay: Metabolic activation:with and without; negative (OECD TG 471) (ECHA)
In vivo Rodent Dominant Lethal Test: negative (OECD TG 478) (mixed xylenes) (ECHA)
- Ethylbenzene : In Vitro Mammalian Chromosome Aberration Test : negative (OECD TG 473) (ECHA), In Vitro Mammalian Cell Gene Mutation Test : negative (OECD TG 476, GLP) (ECHA)
In Vivo Mammalian Erythrocyte Micronucleus Test : negative (OECD TG 474, GLP) (ECHA), In vivo unscheduled DNA synthesis : negative (OECD TG 486, GLP) (ECHA)
- m-xylene : In vitro bacterial reverse mutation assay : negative (OECD TG 471) (ECHA), In Vitro Mammalian Chromosome Aberration Test : negative (EU Method B.10) (ECHA)
In vivo rodent dominant lethal assay : negative (OECD TG 478) (ECHA)
- o-Xylene : In vitro bacterial reverse mutation assay : negative (OECD TG 471) (ECHA), In Vitro Mammalian Chromosome Aberration Test : negative (EU Method B.10) (ECHA)
In vivo rodent dominant lethal assay : negative (OECD TG 478) (ECHA)

○ **Reproductive toxicity : Not classified**

- p-Xylene : 500 ppm mixed xylene (administered for 6 hours per day for 131 days prior to mating, during mating and continuing through gestation and lactation) is a NOAEC for systemic and reproductive toxicity. (ECHA)
Overall it is concluded that xylene isomers are not developmental toxicants. (OECD TG 414) (ECHA)
- Ethylbenzene : rat(male/female); 0, 25, 100, 500 ppm; two-generation reproductive toxicity; There were no adverse effects on reproductive or developmental endpoints at dose levels up to 500 ppm. (OECD TG 416, GLP) (ECHA)
rat; There was no evidence of teratogenicity with ethylbenzene in rats at dose levels up to 2000 ppm. (OECD TG 414) (ECHA)
- m-xylene : rat; 0, 60, 250 or 500 ppm; one-generation reproductive toxicity; No systemic toxicity or effects on reproduction at the highest dose tested. (ECHA)
Rats, mice, rabbits; developmental toxicity; It can be concluded that mixed xylene and the o-, p- and m-xylene isomers produced no teratogenic effects in mice, rats or rabbits. (OECD TG 414) (ECHA)

- o-Xylene : rat; 0, 60, 250 or 500 ppm; one-generation reproductive toxicity; No systemic toxicity or effects on reproduction at the highest dose tested. (ECHA)
Rats, mice, rabbits; developmental toxicity; It can be concluded that mixed xylene and the o-, p- and m-xylene isomers produced no teratogenic effects in mice, rats or rabbits. (OECD TG 414) (ECHA)

○ **Specific target organ toxicity (single exposure) : Category 3(Narcotic effects),구분 3(마취 영향)**

- p-Xylene : inhalation; Clinical observations including body tremors suggestive of CNS involvement were seen at all concentrations during and after exposure, on the day of exposure. (ECHA)
- Ethylbenzene : Not available
- m-xylene : inhalation; rat; Body tremors suggestive of CNS involvement were seen at all concentrations during and after exposure, on the day of exposure. Mydriasis and respiratory difficulties including rapid respiration observed in majority of animals surviving 4349 ppm and higher. LC50 = 27.124 mg/L air/4h (EPA OPP 81-3, GLP) (ECHA)
- o-Xylene : inhalation; rat; Body tremors suggestive of CNS involvement were seen at all concentrations during and after exposure, on the day of exposure. Mydriasis and respiratory difficulties including rapid respiration observed in majority of animals surviving 4349 ppm and higher. LC50 = 27.124 mg/L air/4h (EPA OPP 81-3, GLP) (ECHA)

○ **Specific target organ toxicity (repeated exposure) : Category 1,구분 1**

- p-Xylene : For mixed xylenes Where ethylbenzene is $\geq 10\%$, classification under CLP as STOT-RE Cat 2 H373 is proposed [see Specific Investigations: other studies (ototoxicity)].
The NOAEC of mixed xylenes for male rats exposed 6h/day for 5 days in each of 13 weeks was 3515 mg/m³.
A NOAEC of 3515 mg/m³ was reported by Carpenter et al. (1975) for generalised systemic effects in male rats and male dogs. Other studies have shown that some xylene isomers adversely affect hearing in the rat, with a sub-chronic NOAEC of 1950 mg/m³ reported for p-xylene; the NOAEC for ototoxicity of m-xylene and o-xylene was greater than 7810 mg/m³ (Gagnaire et al., 2001). The ototoxicity of mixed xylenes appears to be dependent upon composition (Gagnaire et al., 2007), with a sub-chronic LOAEC of 1080 mg/m³ reported for one sample while another had a NOAEC of 2170 mg/m³. (ECHA)
- Ethylbenzene : In subchronic inhalation toxicity study with rats, ototoxicity(hearing loss) was observed(NOAEC=ca 2.13 mg/L air).
In the sedentary animals, hearing loss and OHC (outer hair cell) damage were observed at 2.27 mg/L and above, but not at 2.13 mg/L. In the active rats, functional and histological damage was observed at 1.70 mg/L and above, but not at 1.28 mg/L. These results show that the ototoxic potency of styrene exposure depends on the physical activity of the animals as this is related to the ventilation rate and, in turn, to the uptake of the chemical via the lungs. In the experiment investigating the combined effects of noise and styrene, noise alone or styrene alone were found without effect; however, both hearing loss and OHC damage were observed in the animals exposed to noise and
- m-xylene : oral; rat; 0, 100, 200, 800 mg/kg bw/day; 13 weeks; Based on the results of this

study and the conclusion that vehicle and/or test substance aspiration was the cause of all unscheduled deaths in treated animals. The NOAEL of p-xylene was determined to be 200 mg/kg/day. (OECD TG 408, GLP) (ECHA)

- o-Xylene : oral; rat; 0, 100, 200, 800 mg/kg bw/day; 13 weeks; Based on the results of this study and the conclusion that vehicle and/or test substance aspiration was the cause of all unscheduled deaths in treated animals. The NOAEL of p-xylene was determined to be 200 mg/kg/day. (OECD TG 408, GLP) (ECHA)

○ **Aspiration hazard : Not classified**

- p-Xylene : 0.603 mPa.s (25°C) (ECHA) & hydrocarbons
- Ethylbenzene : 0.641 mm²/s (40°C) (ECHA) & hydrocarbons
- m-xylene : 0.581 mm²/s (25 °C) (ECHA) & hydrocarbons
May cause aspiration and chemical pneumonia if swallowed. (ICSC)
- o-Xylene : 0.76 mm²/s (25 °C) (ECHA) & hydrocarbons
May cause aspiration and chemical pneumonia if swallowed. (ICSC)

12. ECOLOGICAL INFORMATION

1) Ecotoxicity

- Acute toxicity : Not classified (ATEmix>1mg/L)
- Chronic toxicity : Not classified

○ **Acute (short-term) aquatic hazard:**

Fish

- p-Xylene : 96h-LC50(Oncorhynchus mykiss) = 2.6 mg/L, static (OECD TG 203) (ECHA)
- Ethylbenzene : 96h-LC50(Oncorhynchus mykiss) = 4.2 mg/L (OECD TG 203) (ECHA)
- m-xylene : 96h-LC50(Oncorhynchus mykiss) = 2.6 mg/L (OECD TG 203) (ECHA)
- o-Xylene : 96h-LC50(Oncorhynchus mykiss) = 2.6 mg/L (OECD TG 203) (ECHA)

Invertebrates

- p-Xylene : 48h-EC50(Daphnia magna)=8.5 mg/L (SIDS)
- Ethylbenzene : 48h-EC50(Daphnia magna) = 1.8 - 2.4 mg/L (ECHA)
- m-xylene : 24h-IC50(Daphnia magna) = 1 mg/L (OECD TG 202) (ECHA)
- o-Xylene : 24h-IC50(Daphnia magna) = 1 mg/L (OECD TG 202) (ECHA)

Aquatic algae

- p-Xylene : 72h-ErC50(Pseudokirchneriella subcapitata)=4.7 mg/L, static (OECD TG 201) (ECHA)
- Ethylbenzene : 96h-EC50(Skeletonema costatum) = 4.9 mg/L (US EPA, GLP) (ECHA)
- m-xylene : 72h-ErC50(Pseudokirchneriella subcapitata) = 4.36 mg/L (OECD TG 201, GLP) (ECHA)
- o-Xylene : 72h-ErC50(Pseudokirchneriella subcapitata) = 4.36 mg/L (OECD TG 201, GLP) (ECHA)

○ **Chronic (Long-term) aquatic hazard:**

Fish

- p-Xylene : NOEC(Oncorhynchus mykiss)>=1.3 mg/L(mixed xylenes) (SIDS)
- Ethylbenzene : Not available
- m-xylene : 35d-NOEC(Danio rerio) = 0.714 mg/L (OECD TG 210, GLP) (ECHA)
- o-Xylene : 35d-NOEC(Danio rerio) = 0.714 mg/L (OECD TG 210, GLP) (ECHA)

Invertebrates

- p-Xylene : 21d-NOEC(Daphnia magna)=1.57 mg/L, static(OECD TG 211, GLP) (ECHA)
- Ethylbenzene : 7d-NOEC(Ceriodaphnia dubia) = 0.96 mg/L (ECHA)
- m-xylene : 21d-NOEC(Daphnia magna) = 1.57 mg/L (OECD TG 211, GLP) (ECHA)
- o-Xylene : 21d-NOEC(Daphnia magna) = 1.57 mg/L (OECD TG 211, GLP) (ECHA)

Aquatic algae

- p-Xylene : Not available
- Ethylbenzene : 96h-NOEC(Skeletonema costatum) = 4.5 mg/L (US EPA, GLP) (ECHA)
- m-xylene : 72h-NOErC(Pseudokirchneriella subcapitata) = 0.44 mg/L (OECD TG 201, GLP) (ECHA)
- o-Xylene : 72h-NOErC(Pseudokirchneriella subcapitata) = 0.44 mg/L (OECD TG 201, GLP) (ECHA)

2) Persistence and degradability

○ Persistence

- p-Xylene : log Kow=3.16 (20 °C) (ECHA)
- Ethylbenzene : log Kow=3.6 (20 °C) (ECHA)
- m-xylene : log Kow = 3.16 (20 °C) (ECHA)
- o-Xylene : log Kow = 3.16 (20 °C) (ECHA)

○ Degradability

- p-Xylene : The estimated half life of p-xylene is 1.06 days based on a recommended reaction rate with hydroxyl radicals and the concentration of hydroxyl radicals recommended in the Technical Guidance Document (2003). (ECHA)
- Ethylbenzene : Half-life in air: 2.3 d (ECHA)
- m-xylene : Not available
- o-Xylene : Not available

3) Bioaccumulative potential

○ Bioaccumulation

- p-Xylene : The highest calculated BCF is 25.9. (ECHA)
- Ethylbenzene : BCF=110 L/kg ww (ECHA)
- m-xylene : BCF = 25.9 (ECHA)
- o-Xylene : BCF = 25.9 (ECHA)

○ Biodegradation

- p-Xylene : 90 % degradation (28 d) (OECD TG 301F, GLP) (ECHA)
- Ethylbenzene : 70-80 % degradation after 28 days; readily biodegradable (GLP) (ECHA)
- m-xylene : 90% degradation after 28d; readily biodegradable (OECD TG 301F, GLP) (ECHA)
- o-Xylene : 90% degradation after 28d; readily biodegradable (OECD TG 301F, GLP) (ECHA)

4) Mobility in soil

- p-Xylene : Koc=246-540 (HSDB)
- Ethylbenzene : Koc=541.4 (EPISUITE)
- m-xylene : Koc = 537 (ECHA)
- o-Xylene : Koc = 537 (ECHA)

5) Hazard to the ozone layer

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

6) Other adverse effects

- p-Xylene : Not available
- Ethylbenzene : Not available
- m-xylene : Not available
- o-Xylene : Not available

13. DISPOSAL CONSIDERATIONS

1) Disposal methods

- Waste must be disposed of in accordance with federal, state and local environmental control regulation.

2) Special precaution for disposal

- Consider the required attentions in accordance with waste treatment management regulation.

14. TRANSPORT INFORMATION

1) UN No.

- 1307

2) Proper shipping name

- XYLENES

3) Transport hazard class(es)

- 3

4) Packing group

- II

5) Marine pollutant

- Not applicable

6) Special safety response for transportation or transportation measure

- Types of Emergency Measures in Case of Fire : F-E
- Types of Emergency Measures in Leakage : S-D

15. REGULATORY INFORMATION

EINECS(or ELINCS)

- p-Xylene : European EINECS phase-in substance
- Ethylbenzene : European EINECS phase-in substance
- m-xylene : European EINECS phase-in substance
- o-Xylene : European EINECS phase-in substance

EU CLP (CLASSIFICATION) - PRODUCT : Toxic substance

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

Substances restricted under REACH

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable

- m-xylene : Not applicable
- o-Xylene : Not applicable

Substances subject to authorization under REACH

REACH SVHC List

Korea

○ Occupational Safety and Health Act

- p-Xylene : Substance subject to occupational exposure limits, Hazardous substance subject to control, Harmful agents subject to work environment monitoring, Harmful agents subject to workers requiring health examination, Substance subject to submission of process safety reports
- Ethylbenzene : Substance subject to occupational exposure limits, Hazardous substance subject to control, Harmful agents subject to work environment monitoring, Harmful agents subject to workers requiring health examination, Substance subject to submission of process safety reports
- m-xylene : Substance subject to occupational exposure limits, Hazardous substance subject to control, Harmful agents subject to work environment monitoring, Harmful agents subject to workers requiring health examination, Substance subject to submission of process safety reports
- o-Xylene : Substance subject to occupational exposure limits, Hazardous substance subject to control, Harmful agents subject to work environment monitoring, Harmful agents subject to workers requiring health examination, Substance subject to submission of process safety reports

○ K-REACH

- p-Xylene : Phase-in Substances subject to Registration, Substance subject to intensive control (2019)
- Ethylbenzene : Not applicable
- m-xylene : Phase-in Substances subject to Registration, Substance subject to intensive control (2019)
- o-Xylene : Phase-in Substances subject to Registration, Substance subject to intensive control (2019)

○ Chemical Control Act in Korea

- p-Xylene : Toxic substance, List of substance subjected to the PRTR
- Ethylbenzene : List of substance subjected to the PRTR
- m-xylene : Toxic substance, List of substance subjected to the PRTR
- o-Xylene : Toxic substance, List of substance subjected to the PRTR

○ Safety Control of Dangerous Substances Act

- p-Xylene : Dangerous substance
- Ethylbenzene : Dangerous substance
- m-xylene : Dangerous substance
- o-Xylene : Not applicable

U.S.A

○ US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

○ CERCLA Designation of hazardous substances (40 CFR 302.4)

- p-Xylene : US management information(CERCLA regulation)
- Ethylbenzene : US management information(CERCLA regulation)
- m-xylene : US management information(CERCLA regulation)
- o-Xylene : US management information(CERCLA regulation)

○ CERCLA Section 302 regulation

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

○ **CERCLA Section 304 regulation**

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

○ **CERCLA Section 313 regulation**

- p-Xylene : US management information(CERCLA Section 313 regulation)
- Ethylbenzene : US management information(CERCLA Section 313 regulation)
- m-xylene : US management information(CERCLA Section 313 regulation)
- o-Xylene : US management information(CERCLA Section 313 regulation)

Interntional Convention on Environment

○ **Rotterdam Convention list**

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

○ **Stockholm Convention list**

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

○ **Montreal Protocol list**

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

National Inventory

○ **Korea**

- p-Xylene : Not applicable
- Ethylbenzene : Not applicable
- m-xylene : Not applicable
- o-Xylene : Not applicable

○ **U.S.A**

- p-Xylene : US TSCA phase-in substance
- Ethylbenzene : US TSCA phase-in substance
- m-xylene : US TSCA phase-in substance
- o-Xylene : US TSCA phase-in substance

○ **China**

- p-Xylene : China phase-in substance
- Ethylbenzene : China phase-in substance

- m-xylene : China phase-in substance
- o-Xylene : China phase-in substance

○ Japan

- p-Xylene : Japan ENCS phase-in substance
- Ethylbenzene : Japan ENCS phase-in substance
- m-xylene : Japan ENCS phase-in substance
- o-Xylene : Japan ENCS phase-in substance

16. OTHER INFORMATION

1) Reference

- Sources of information used in preparing this SDS included one or more of the following: Internal technical data, data from OECD eChemPortal, ECHA, NITE, TOXNET, IPCS and KOSHA search results.

2) Issue Date

- 2008-07-25

3) Revision number and Last date revised

○ Number of revised

- 9

○ Date of last revision

- 2024-01-11

○ Last Revision History

- We have reviewed the ingredient content and revised the 3. COMPOSITION/INFORMATION ON INGREDIENTS sections. No changes to the hazard classification.

4) Other

- The information contained in the Safety Data Sheet is at the date of its issuance to the best of our knowledge correct according to the data available to us. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.