Safety Data Sheet(SDS)

According to Regulation (EU) No. 2020/878

Version : 3-1

Revision date : 01-06-2026

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product identifier : S-MX_SOLVENT_MIXED_XYLENE

Other means of identification : No data

1.2. Relevant identified uses of the substance or mixture and uses advised against

○ Relevant identified uses

1.Raw materials and intermediates, Solvent and extraction agents

○ Uses advised against

Use for recommended use only
Do not use it for weapons manufacturing and related purposes.

1.3. Details of the supplier of the safety data sheet

○ Seller

Company name : Lotte Daesan Petrochem Corporation
Address : 82 Dokgot 1-ro, Daesan-eup, Seosan-si, Chungcheongnam-do
Telephone number : +82-41-689-5114
Fax number : +82-41-689-5985
Email : www.ldpc.co.kr (contact)

1.4. Emergency telephone number

Emergency phone number : (Control Room) +82-41-689-5119
Opening hours : 08:30~17:30 (GMT+9)
Other comments(e.g. language(s) of the phone service) : English

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

- Flammable liquids Category 3
- Acute toxicity(Dermal) Category 4
- Acute toxicity(Inhalation:Vapours) Category 4
- Acute toxicity(Inhalation:Dust/mist) Category 4
- Skin corrosion/irritation Category 2
- Specific target organ toxicity - repeated exposure Category 2
- Aspiration hazard Category 1

2.2. Label elements

Hazard pictograms

Signal word

- DANGER

Hazard statements

H226 Flammable liquid and vapour
H304 May be fatal if swallowed and enters airways
H312 Harmful in contact with skin
H315 Causes skin irritation
H332 Harmful if inhaled
H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

- 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 only explosion-proof electrical, ventilating, lighting and equipment.
P242 Use non-sparking tools.
P243 Take action to prevent static discharges.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Avoid contact during pregnancy/ while nursing.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

- Response

P301+P310 IF SWALLOWED: Call a POISON CENTER / toxins center / physician.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Discomfort call a POISON CENTER / toxins center / physician if you feel unwell.
P314 Get medical advice/attention if you feel unwell.
P321 Specific treatment (see supplemental instructions on the administration of antidotes on this label).
P331 Do NOT induce vomiting.
P332+P313 If skin irritation occurs: Get medical advice/ attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P370+P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

- Storage

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

- Disposal

P501 Discard the contents/containers in accordance with the laws and laws related to waste.

2.3. Other hazards

- No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Substance name	1) CAS No 2) EC No	Classification	1) Index number 2) SCL 3) M-Factor 4) ATE	Content(wt%)
Ethylbenzene	1) 100-41-4 2) 202-849-4	Flam. Liq. 2, Acute Tox. 4, STOT RE 2, Asp. Tox. 1	1) - 2) - 3) - 4) Acute toxicity(Oral) : 3500mg/kg, Acute toxicity(Inhalation:Vapours) : 4000mg/L	60
m-xylene	1) 108-38-3 2) 203-576-3	Flam. Liq. 3, Acute Tox. 4, Acute Tox. 4, Skin Irrit. 2	1) - 2) - 3) - 4) Acute toxicity(Oral) : 6602mg/kg, Acute toxicity(Dermal) : 12126mg/kg, Acute toxicity(Inhalation:Gases) : 5984ppm, Acute toxicity(Inhalation:Dust/mist) : 39.59mg/L	20
o-Xylene	1) 95-47-6 2) 202-422-2	Flam. Liq. 3, Acute Tox. 4, Acute Tox. 4, Skin Irrit. 2	1) - 2) - 3) - 4) Acute toxicity(Oral) : 3523mg/kg, Acute toxicity(Dermal) : 12126mg/kg, Acute toxicity(Inhalation:Gases) : 4000ppm, Acute toxicity(Inhalation:Vapours) : 5922mg/L	9

p-Xylene	1) 106-42-3 2) 203-396-5	Flam. Liq. 3, Acute Tox. 4, Acute Tox. 4, Acute Tox. 4, Acute Tox. 4, Skin Irrit. 2	1) - 2) - 3) - 4) Acute toxicity(Oral) : 3523mg/kg, Acute toxicity(Dermal) : 12126mg/kg, Acute toxicity(Inhalation:Gases) : 4550ppm, Acute toxicity(Inhalation:Vapours) : 25.713mg/L	8
Hydrocarbons, (C=5-8)	1) 92128-65-9 2) 295-762-6		1) - 2) - 3) - 4) -	3

SECTION 4: First aid measures

4.1. Description of first aid measures

- 4.1.1. Eye contact
  - In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
  - Seek immediate medical assistance.
- 4.1.2. Skin contact
  - For hot product, immediately immerse in or flush the affected area with large amounts of cold water to dissipate heat.
  - In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
  - For minor skin contact, avoid spreading material on unaffected skin.
  - In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
  - Remove and isolate contaminated clothing and shoes.
  - Wash skin with soap and water.
  - Seek immediate medical assistance.
- 4.1.3. Inhalation
  - Administer oxygen if breathing is difficult.
  - Do not use mouth-to-mouth method if victim ingested or 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.
  - If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.
  - Give artificial respiration if victim is not breathing.
  - Keep victim warm and quiet.
  - Move to fresh air.
- 4.1.4. If swallowed
  - Seek immediate medical assistance.
  - Do not use mouth-to-mouth method if victim ingested or 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.

4.2. Most important symptoms and effects, both acute and delayed

- No data available

4.3. Indication of any immediate medical attention and special treatment needed

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

- themselves.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media
  - Dry chemical.
  - CO_2.
  - For mixtures containing alcohol or polar solvent: Alcohol-resistant foam.
  - Direct water.
  - Use dry sand or earth to smother fire.
  - Regular foam.
  - Water spray.
  - Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Unsuitable extinguishing media
  - Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

- Vapor explosion hazard indoors, outdoors or in sewers.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Can decompose at high temperatures forming toxic gases.
- Can form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- May violently polymerize and result in fire and explosion.
- Runoff may create fire or explosion hazard.
- Some may burn but none ignite readily.

5.3. Advice for firefighters

- Move containers from fire area if you can do it without risk.
- Rescuers should put on appropriate protective gear.
- Substance may be transported hot.
- Substance may be transported in a molten form.
- Cautions ; Most of liquids are lighter than water.
- Dike fire-control water for later disposal; do not scatter the material.
- Evacuate area and fight fire from a safe distance.
- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.
- Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment
  - The wearing of suitable protective equipment to prevent any contamination of skin, eyes and personal clothing.
- Emergency procedures
  - Removal of ignition sources, provision of sufficient ventilation.

6.1.2. For emergency responders

- Wear protective equipment and keep unprotected persons away.
- Avoid dust formation.

6.2. Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3. Methods and material for containment and cleaning up

6.3.1. For containment

- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

6.3.2. For cleaning up

- Clear spills immediately.
- Don't use a brush or compressed air for cleaning surfaces or clothing.

6.3.3. Other information

- Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Dike and collect water used to fight fire.
- Absorb the liquid and scrub the area with detergent and water.
- Large Spill: Dike far ahead of liquid spill for later disposal.
- Reduce airborne dust and prevent scattering by moistening with water.
- Use clean non-sparking tools to collect absorbed material.

6.4. Reference to other sections

- Section 8 (protective equipment), section 13 (disposal instructions)

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Measure atmospheric oxygen concentration and ventilate the area during the operation since low-closed area can cause oxygen deficiency.
- Please note that materials and conditions to be avoided.
- Use care in handling/storage.
- Use only in a well-ventilated area.
- All equipment used when handling the product must be grounded.
- Avoid breathing vapors from heated material.

- Avoid prolonged or repeated contact with skin.
- Caution: Heat.
- Do not enter storage area unless adequately ventilated.
- 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.
- Handling refer to engineering control/personal protection section.
- Loosen closure cautiously before opening.

7.2. Conditions for safe storage, including any incompatibilities

- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.

7.3. Specific end use(s)

- See section 1 for recommended use.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Components	Occupational Exposure	ACGIH regulations	Biological limit values	DNEL/DMEL	PNEC-Values
Ethylbenzene	100 ppm TWA; 442 mg/m3 TWA 200 ppm STEL; 884 mg/m3 STEL	20 ppm TWA	0.15 G / G Creatinine Medium: Urine Time: End of Shift Parameter: Sum of Mandelic Acid and Phenylglyoxylic Acid (Nonspecific)	No data available	No data available
m-xylene	50 ppm TWA; 221 mg/m3 TWA 100 ppm STEL; 442 mg/m3 STEL	20 ppm TWA	Methylhippuric acids in Urine: 1.5 g / g Creatinine, End of Shift	No data available	No data available
o-Xylene	50 ppm TWA; 221 mg/m3 TWA 100 ppm STEL; 442 mg/m3 STEL	20 ppm TWA	Methylhippuric acids in Urine: 1.5 g / g Creatinine, End of Shift	No data available	No data available
p-Xylene	50 ppm TWA; 221 mg/m3 TWA 100 ppm STEL; 442 mg/m3 STEL	20 ppm TWA	No data available	No data available	No data available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
- If user operations generate dust, fume, or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2. Individual protection measures, such as personal protective equipment

○ Eye/face protection

- If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles.

○ Skin protection

(i) Hand protection

- Wear chemical safety gloves.

(ii) Other

- No data available

○ Respiratory protection

- If you have a direct contact or exposed to the material, wear the appropriate form of respiratory protection certified.

○ Thermal hazards

- Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

8.2.3. Environmental exposure controls

- Ensure not to cause envirionmental pollution by discharging into rivers or other waterways.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Property name	Values	Source
Physical state	liquid	
Colour	colourless	
Odour	Do not attempt to smell the product as it is hazardous.;characteristic	
Melting point/freezing point	-39.3˚C	
Initial boiling point and boiling range(℃)	139.6℃	
Flammability(solid, gas)	No data available	
Upper/lower flammability or explosive limits	Upper flammability limits : 7 %(V), Lower flammability limits : 1 %(V)	
Flash point(℃)	28.7℃	
Auto ignition temperature	488 ℃ (1,013 hPa)	
Decomposition temperature	No data available	
pH	No data available	
Kinematic viscosity(㎟/s, 40℃)	0.74 ㎟/s (25 ℃)	
Solubility	165.8mg/L (25°C)	
Partition coefficient(n-octanol/water)	Log Kow: 3.16 (20°C)	
Vapour pressure	821 pa (20°C)	
Density/Relative density	0.86 g/cm3 (25°C)	
Relative Vapour density	3.7	
Particle characteristics	No data available	
Specific gravity	No data available	

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Property name	Values	Source
Flammable liquids	Flash point : 28.7℃, Initial boiling point and boiling range : 139.6℃	

9.2.2. Other safety characteristics

- No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

- Vapor explosion hazard indoors, outdoors or in sewers.
- Vapors may form explosive mixtures with air.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Can decompose at high temperatures forming toxic gases.
- Can form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- May violently polymerize and result in fire and explosion.
- Runoff may create fire or explosion hazard.
- Some may burn but none ignite readily.

10.2. Chemical stability

- Vapor explosion hazard indoors, outdoors or in sewers.
- Vapors may form explosive mixtures with air.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Can decompose at high temperatures forming toxic gases.
- Can form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- May violently polymerize and result in fire and explosion.
- Runoff may create fire or explosion hazard.
- Some may burn but none ignite readily.

10.3. Possibility of hazardous reactions

- Vapor explosion hazard indoors, outdoors or in sewers.
- Vapors may form explosive mixtures with air.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Can decompose at high temperatures forming toxic gases.
- Can form explosive mixtures at temperatures at or above the flashpoint.
- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.
- HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
- May violently polymerize and result in fire and explosion.
- Runoff may create fire or explosion hazard.

- Some may burn but none ignite readily.

10.4. Conditions to avoid

- Heat.
- Ignition source(heat, spark, flame, etc.).

10.5. Incompatible materials

- Combustibles, reducing material.

10.6. Hazardous decomposition products

- Corrosive/toxic fume.
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
- Irritating, corrosive and/or toxic gas.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

○ Acute toxicity

- Acute toxicity(Oral) PRODUCT : Not classified

  - p-Xylene
    : LD50 3523 mg/kg Test species: Rat (EU Method B1)
  - Hydrocarbons, (C=5-8)
    : LD50 >3492 mg/kg Species : Rat (1 dead)
  - o-Xylene
    : LD50 3523 mg/kg Test species: Rat (EU Method B1)
  - Ethylbenzene
    : LD50 3500 mg/kg Test species: Rat
  - m-xylene
    : LD50 6602 mg/kg Test species: Rat (OECD TG 401)

- Acute toxicity(Dermal) PRODUCT : Category 4(ATEmix = 1189.189mg/kg)

  - p-Xylene
    : EU-CLP Classifications (Category 4 : 1100mg/kg)
    LD50 12126 mg/kg Test species: Rabbit (isomer m-xylene)
  - Hydrocarbons, (C=5-8)
    : LD50 >3160 mg/kg Test species: Rabbit (OECD Guideline 402)
  - o-Xylene
    : EU-CLP Classifications (Category 4 : 1100mg/kg)
    LD50 12126 mg/kg Test species: Rabbit (isomer m-xylene)
  - Ethylbenzene
    : LD50 >20000 mg/kg Test species: Rabbit (OECD Guideline 402 GLP)
  - m-xylene
    : EU-CLP Classifications (Category 4 : 1100mg/kg)
    LD50 12126 mg/kg Experimental species: Rabbit

- Acute toxicity(Inhalation:Gases) PRODUCT : Not classified

  - p-Xylene
    : EU-CLP Classifications (Category 4 : 4500ppm)
    LC50 4550 ppm 4 hr Experimental species: Rat
  - o-Xylene
    : LC50 4000 ppm 6 hr Test species: Rat (steam)
  - m-xylene

: LC50 5984 ppm 6 hr Test species: Rat (vapor)

- Acute toxicity(Inhalation:Vapours) PRODUCT : Category 4(ATEmix = 10.185mg/L)

- p-Xylene

: EU-CLP Classifications (Category 4 : 11mg/L)

LC50 25.713 ㎎/ℓ 4 hr Test species: Rat (EPA OPP 81-3, GLP)

- Hydrocarbons, (C=5-8)

: LC50 >6.193 ㎎/ℓ 4 hr Species : Rat (OECD Guideline 403 GLP)

- o-Xylene

: EU-CLP Classifications (Category 4 : 11mg/L)

LC50 5922 ppm 4 hr Species : Rat (EPA OPP 81-3, GLP)

- Ethylbenzene

: EU-CLP Classifications (Category 4 : 11mg/L)

LC50 4000 ppm 4 hr Experimental species: Rat (Rat LC50=4000 ppm 4 hr conversion value: 17.8 mg/L(ECHA, HSDB), RD50=1432 ppm 6.2 mg/L; EU CLP harmonic classification 4)

- m-xylene

: EU-CLP Classifications (Category 4 : 11mg/L)

- Acute toxicity(Inhalation:Dust/mist) PRODUCT : Category 4(ATEmix = 1.500mg/L)

- p-Xylene

: EU-CLP Classifications (Category 4 : 1.5mg/L)

- m-xylene

: LC50 39.59 mg/ℓ 4 hr Experimental species: Rat (Saturated vapor pressure 0.67 kPa at 20°C, saturated vapor pressure concentration higher than 6,600 ppm, judged as mist)

○ Skin corrosion/irritation PRODUCT : Category 2

- p-Xylene

: EU-CLP Classifications (Category 2)

Skin irritation test using rabbits EU Method B.4 Result: Moderate irritation with a primary skin irritation index of 3

- Hydrocarbons, (C=5-8)

: Rabbit Normal skin irritation Erythema 1.9 Directive 67/548/EEC (OECD TG 404) GLP

- o-Xylene

: EU-CLP Classifications (Category 2)

Skin irritation test using rabbits EU Method B.4 Result: Moderate irritation with a primary skin irritation index of 3

- Ethylbenzene

: Moderate irritation as a result of skin irritation test using rabbits

- m-xylene

: EU-CLP Classifications (Category 2)

Skin irritation test using rabbits EU Method B.4 result: p-xylene, a moderately irritating isomer with a primary skin irritation index of 3

○ Serious eye damage/eye irritation PRODUCT : Not classified

- p-Xylene

: Short-term exposure standard: STEL 100 ppm of mixed xylene causes eye and respiratory irritation in humans exposed to it.

- Hydrocarbons, (C=5-8)

: Rabbit Non-irritant OECD Guideline 405 GLP

- o-Xylene

: Eye and respiratory irritant effects appear in humans exposed to mixed xylene at a short-term exposure limit (STEL) of 100 ppm.

- Ethylbenzene

: As a result of eye irritation test in rabbits, there was no slight irritation to the conjunctiva and no corneal damage.

- m-xylene

: Short-term exposure standard: STEL 100 ppm of mixed xylene causes eye and respiratory irritation in humans exposed to it.

○ Respiratory sensitization PRODUCT : Not classified

- No data available

○ Skin sensitization PRODUCT : Not classified

- p-Xylene

: Mouse Regional Lymph Node Test OECD TG 429 Hypersensitivity

- Hydrocarbons, (C=5-8)

: Guinea pig (cancer) non-sensitivity OECD Guideline 406

- o-Xylene

: Mouse Regional Lymph Node Test OECD TG 429 Hypersensitivity

- m-xylene

: Mouse regional lymph node test using xylene OECD TG 429 Non-sensitivity

○ Carcinogenicity PRODUCT : Not classified

- p-Xylene

: A4 (ACGHI)

- o-Xylene

: A4 (ACGHI)

- Ethylbenzene

: 2B (IARC)

A3 (ACGHI)

2 (Notification of Ministry of Employment and Labor)

- m-xylene

: A4 (ACGHI)

○ Germ cell mutagenicity PRODUCT : Not classified

- p-Xylene

: In vitro reversion mutation test using bacteria. OECD TG471 result was negative, in vivo micronucleus test using mouse bone marrow cells OEF 474, GLP result was negative.

- Hydrocarbons, (C=5-8)

: In vitro mammalian chromosomal abnormality test negative OECD Guideline 473 GLP, in vitro mammalian cell gene mutation test negative OECD Guideline 476 GLP, sister chromosome exchange test using in vitro mammalian cells negative OECD Guideline 479 GLP, in vivo chromosome abnormality test negative OECD Guideline 475 GLP

- o-Xylene

: In vitro reversion mutation test using bacteria. OECD TG 471 result was negative, in vivo micronucleus test using mouse bone marrow cells. OECD TG 474, GLP result was negative.

- Ethylbenzene

: Negative genotoxicity test using mouse lymphoma L5178Y cells, negative chromosomal abnormality test using Chinese hamster Ovary; synthesis;UDS test result negative, OECD TG474, OECD TG486, GLP

- m-xylene

: In vitro reversion mutation test using bacteria. OECD TG471 result was negative, in vivo micronucleus test

using mouse bone marrow cells OEF 474, GLP result was negative.

○ Reproductive toxicity PRODUCT : Not classified

- p-Xylene

: Inhalation exposure (24 hr/d) study during organ formation in pregnant rats at doses (3,000 mg/m3) that reduced maternal animal feed or reduced serum neutral hormone concentrations, confirmed decreased fetal weight, reduced number of abdominal fetuses, and supernumerary ribs.

- Hydrocarbons, (C=5-8)

: Reproductive toxicity Rat vapor NOAEC= 1500 ppm (7500 mg/m3) Reduced pup weight at birth. All surviving males found very few signs of toxicity. Seven females died at 1500 ppm. GLP

- o-Xylene

: Mouse, inhalation 500mg/m3/12h, (6-15d gestation), toxic effects in embryo or fetus, including stunting, abnormalities in musculoskeletal development

- Ethylbenzene

: As a result of the second-generation inhalational reproductive toxicity test using rats (OECD TG416, GLP), no adverse effects related to reproduction or development were observed up to 500ppm. NOEL for parental systemic toxicity was NOEL=100 ppm due to weight loss and increase in liver weight. As a result of an inhalational developmental toxicity test using rats (EOCD TG414, GLP), no teratogenic effects were observed up to 2000ppm. Weak neonatal weight loss at 1000 or 2000 ppm. Maternal toxicity decreased body weight and feed consumption at 1000 and 2000 ppm. NOAEL(teratogenicity)=2000ppm, NOAEL(maternal/developmental toxicity)=500ppm.

- m-xylene

: Mouse, inhalation 500mg/m3/12h, (6-15d gestation), toxic effects in embryo or fetus, including stunting, abnormalities in musculoskeletal development

○ Specific target organ toxicity single exposure PRODUCT : Not classified

- p-Xylene

: Dizziness has been reported in humans, and significant arousal, tremors, and anesthetic effects have been reported in experimental animals. When exposed to 100ppm442 mg/㎥ in humans, mild irritation to the eyes and upper respiratory tract and slight central nervous system effects.

- Hydrocarbons, (C=5-8)

: Rat oral (male) LD50 > 8 mL/kg bw (6984 mg/kg/bw), (female) LD50 4 mL/kg bw (3492 mg/kg bw) female rat 1 dead (4 ml/kg) 2 females Death after signs of ataxia and loss of consciousness (8 ml/kg)

- o-Xylene

: Dizziness has been reported in humans, and significant arousal, tremors, and anesthetic effects have been reported in experimental animals. When exposed to 100ppm442 mg/㎥ in humans, mild irritation to the eyes and upper respiratory tract and slight central nervous system effects.

- Ethylbenzene

: Causes nervous system effects such as vertigo and airway irritation in laboratory animals.

- m-xylene

: Dizziness has been reported in humans, and significant arousal, tremors, and anesthetic effects have been reported in experimental animals. When exposed to 100ppm442 mg/㎥ in humans, mild irritation to the eyes and upper respiratory tract and slight central nervous system effects.

○ Specific target organ toxicity repeated exposure PRODUCT : Category 2

- p-Xylene

: Effects on the central nervous system

- Hydrocarbons, (C=5-8)

: Rat oral 90 days NOAEL=600 mg/kg bw/day Lack of adverse effects (increased kidney, liver, and serum

phosphorus) OECD Guideline 408

- o-Xylene

: Effects on the central nervous system

- Ethylbenzene

: EU-CLP Classifications (Category 2)

13-week repeated oral toxicity test using rats NOAEL=75 mg/kg bw/day OECD TG408, GLP, ECHA 13 weeks using mice based on hematologic changes indicating mild regenerative anemia, increase in liver weight, and changes in centriolobular hepatocyte hypertrophy As a result of repeated inhalation toxicity test, liver and kidney weight increased at 750 ppm 3.55 mg/L or higher, but no other histopathological findings or adverse effects were observed NOAEC=1000 ppm4.74 mg/LOECD Inhalation neurotoxicity using TG413, ECHA rats As a result of repeated inhalation exposure at concentrations of 200-800 ppm for 4 to 13 weeks to confirm OECD TG424, hearing thresholds did not recover even after 8 weeks after cessation of exposure at concentrations above 400 ppm. During the 8-week recovery period, the OHC loss of 200-800ppm increased significantly to 4% and 100%, respectively. LOAEL=200ppm

- m-xylene

: Effects on the central nervous system

○ Aspiration hazard PRODUCT : Category 1

- p-Xylene

: Aspiration hazard: Hydrocarbon, kinematic viscosity 0.603 mPa s 25℃ If the liquid is swallowed, there is a reported risk of causing chemical pneumonitis due to smoke fumes.

- Hydrocarbons, (C=5-8)

: Kinematic Viscosity = 1.20mm2/s Hydrocarbon

- o-Xylene

: Aspiration hazard: Hydrocarbon, kinematic viscosity 0.603 mPa s 25℃ If the liquid is swallowed, there is a reported risk of causing chemical pneumonitis due to smoke fumes.

- Ethylbenzene

: EU-CLP Classifications (Category 1)

hydrocarbons. Swallowing of liquid may cause chemical pneumonia by aspiration. Kinematic viscosity 0.64 ㎟/s 25 ℃

- m-xylene

: Aspiration hazard: Hydrocarbon, kinematic viscosity 0.603 mPa s 25℃ If the liquid is swallowed, there is a reported risk of causing chemical pneumonitis due to smoke fumes.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties PRODUCT : Not classified

- p-Xylene
  Not applicable
- Hydrocarbons, (C=5-8)
  Not applicable
- o-Xylene
  Not applicable
- Ethylbenzene
  Not applicable
- m-xylene
  Not applicable

11.2.2. Other information PRODUCT : Not classified

- p-Xylene
  No other hazards have been identified
- Hydrocarbons, (C=5-8)
  No other hazards have been identified
- o-Xylene
  No other hazards have been identified
- Ethylbenzene
  No other hazards have been identified
- m-xylene
  No other hazards have been identified

SECTION 12: Ecological information

12.1. Toxicity

- Fish PRODUCT : Not classified
  - p-Xylene
    : LC50 2.6 mg/ℓ 96 hr Others (OECD Guideline 203)
  - Hydrocarbons, (C=5-8)
    : LC50 9.2 mg/ℓ 96 hr Oncorhynchus mykiss ((LL50) OECD Guideline 203 GLP)
  - o-Xylene
    : LC50 >1000 mg/ℓ 96 hr Oncorhynchus mykiss (OECD Guideline 203)
  - Ethylbenzene
    : LC50 5.1 mg/L 96 hr
  - m-xylene
    : LC50 8.4 mg/ℓ 96 hr Others (OECD Guideline 203)
- Crustaceans PRODUCT : Not classified
  - p-Xylene
    : LC50 3.6 mg/ℓ 24 hr Others (OECD TG 202)
  - Hydrocarbons, (C=5-8)
    : EC50 3.2 mg/ℓ 48 hr Daphnia magna ((EL50) OECD Guideline 202 GLP)
  - o-Xylene
    : EC50 3.82 mg/ℓ 48 hr Daphnia magna
  - Ethylbenzene
    : LC50 1.8 mg/ℓ 48 hr Daphnia magna (Ceriodaphnia dubia NOEC 1.0 mg/L (0.96 mg/L) 7days)
  - m-xylene
    : LC50 4.7 mg/ℓ 24 hr Others (OECD TG 202)
- Aquatic algae PRODUCT : Not classified
  - p-Xylene
    : EC50 4.06 mg/ℓ 72 hr Others (OECD TG201, GLP)
  - Hydrocarbons, (C=5-8)
    : ErC50 2.9 ㎎/ℓ 72 hr Other ((ErL50) Species: Raphidocelis subcapitata, OECD Guideline 201 GLP)
  - o-Xylene
    : EC50 4.06 mg/L 72 hr (OECD TG 201)
  - Ethylbenzene
    : EC50 2.6 mg/ℓ 96 hr Other (marine invertebrate)
  - m-xylene
    : EC50 4.9 mg/ℓ 72 hr Others (OECD TG201, GLP)

12.2. Persistence and degradability

- Degradability PRODUCT : Not classified

  No data available

- Biodegradation PRODUCT : Not classified

  - p-Xylene

    : 90% 28 days (OECD TG301F, GLP)

  - Hydrocarbons, (C=5-8)

    : 78 (%) 28 days (OECD Guideline 301 F)

  - o-Xylene

    : 90% 28 days (OECD TG 301F, GLP)

  - Ethylbenzene

    : 80 % ~ 70 % 28 day (ISO 14593 CO2 headspace test, GLP)

  - m-xylene

    : 90% 28 days (OECD TG301F, GLP)

12.3. Bioaccumulative potential

- n-octanol water partition coefficient PRODUCT : Not classified

  - p-Xylene

    : 3.15 log Kow

  - o-Xylene

    : 3.15 log Kow

  - Ethylbenzene

    : 3.15 log Kow

  - m-xylene

    : 3.15 log Kow

- Bioconcentration factor(BCF) PRODUCT : Not classified

  - o-Xylene

    : 25.9

  - Ethylbenzene

    : 1 (BCF)

  - m-xylene

    : 14.8

12.4. Mobility in soil PRODUCT : Not classified

- p-Xylene

  : 540 Koc to 246 Koc

- o-Xylene

  : 537 Koc (OECD TG 121)

- Ethylbenzene

  : (log koc = 2.41, measured)

- m-xylene

  : 166

12.5. Result of PBT and vPvB assessment PRODUCT : Not classified

Not applicable

12.6. Endocrine disrupting properties PRODUCT : Not classified

Not applicable

12.7. Other adverse effects PRODUCT : Not classified

- p-Xylene

  : Not applicable

- Hydrocarbons, (C=5-8)

: Not applicable

- o-Xylene

: Not applicable

- Ethylbenzene

: Not applicable

- m-xylene

: Not applicable

SECTION 13: Disposal considerations

13.1. Waste treatment methods

13.1.1. Product / Packaging disposal

- Empty containers should be taken to an approved waste handling site for recycling or disposal.

○ Waste codes / waste designations according to LoW

- No data available

13.1.2. Waste treatment-relevant information

- Disposal according to local regulations.

13.1.3. Sewage disposal-relevant information

- Disposal according to local regulations and avoid release to the environment.

13.1.4. Other disposal recommendations

- No data available

SECTION 14: Transport information

14.1. UN number or ID number : 1307

14.2. UN proper shipping name : XYLENES

14.3. Transport hazard class(es) : 3

14.4. Packing group : III

14.5. Environmental hazards : Not applicable

14.6. Special precautions for user :

Emergency measures in case of fire : F-E

Emergency measures in the effluent : S-D

14.7. Maritime transport in bulk according to IMO instruments :

Not applicable

- ADR

· Tunnel restriction code : D/E

- IMDG

· Marine pollutant : Not applicable

- Air transport(IATA)

· UN No. : 1307

· Proper shipping name : XYLENES

· Class or division : 3

· Packing group : III

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU regulations

- EU - REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances

- p-Xylene : Use restricted. See item 75. (C)

- m-xylene : Use restricted. See item 75. (C)

- o-Xylene : Use restricted. See item 75. (C)

- EU - REACH (1907/2006) - Annex XIV - Substances Subject to Authorization

- Not applicable

15.1.2. Other EU regulations

- EU - Persistent Organic Pollutants (POPs) (2019/1021) - Annex III - Substances Subject to Release Reduction Provisions

- Not applicable

- EU - Persistent Organic Pollutants (POPs) (2019/1021) - Annex I - Substances Subject to Prohibitions

- Not applicable

- EU - Persistent Organic Pollutants (POPs) (2019/1021) - Annex IV - Waste Management - Concentration Limits

- Not applicable

- EU - Persistent Organic Pollutants (POPs) (2019/1021) -Annex V-Waste Management-Maximum Concentration Limits

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II A - WB Phase 1 - VOCs

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II A - WB Phase 2 - VOCs

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II B - Vehicles - VOCs

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II A - SB Phase 1 - VOCs

- Not applicable

- EU - Paints, Varnishes, Vehicle Refinishing Products (2004/42/CE) - Annex II A - SB Phase 2 - VOCs

- Not applicable

- EU - Seveso III Directive (2012/18/EU) - Qualifying Quantities of Dangerous Substances - Lower-Tier Requirements
  - Not applicable
- EU - Seveso III Directive (2012/18/EU) - Qualifying Quantities of Dangerous Substances - Higher-Tier Requirements
  - Not applicable
- EU - Export and Import Restrictions (649/2012) - Chemicals Subject to Export Notification Procedure
  - Not applicable
- EU - Export and Import Restrictions (649/2012) - Chemicals and Articles Subject to Export Ban
  - Not applicable
- EU - Export and Import Restrictions (649/2012) - Chemicals Subject to the PIC Procedure under the Rotterdam Convention
  - Not applicable
- EU - Export and Import Restrictions (649/2012) - Chemicals Qualifying for PIC Notification
  - Not applicable

15.2. Chemical safety assessment

- A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

16.1. Key literature references and sources for data

NCIS, KOSHA, Montreal Protocol, ECHA, OECD SIDS, EU IUCLID, HSDB(PubChem), NITE, NTP, ACGIH, IARC, NIOSH, ChemIDplus, EPA, EPI Suite, INCHEM

16.2. Issuing date : 02-06-2025

16.3. Indication of changes

- Revision number : 3-1
- Revision date : 01-06-2026

16.4. Abbreviations and acronyms

ACGIH : American Conference of Governmental Industrial Hygienists
ADR : Agreement Concerning the International Carriage of Dangerous Goods by Road
ATE : The Acute Toxicity Estimate
ECHA : European Chemicals Agency
EPA : United States Environmental Protection Agency
EPI Suite : The Estimation Programs Interface for Windows
EU IUCLID : International Uniform Chemical Information Database
HSDB : Hazardous Substances Data Bank
IARC : International Agency for Research on Cancer
IATA : International Air Transport Association
IMDG : International Maritime Dangerous Goods Codes
INCHEM : Internationally Peer Reviewed Chemical Safety Information
M-Factor : The Multiplication Factor
NIOSH : National Institute of Occupational Safety and Health
NITE : National Institute of Technology and Evaluation(JAPAN)

NTP : National Toxicology Program
SCL : Specific Concentration Limit
OECD SIDS : Organization for Economic Co-operation and Development Screening Information Dataset

For explanation of abbreviations see section 16.

• This substance/mixture contain(s) only ingredients which have been registered, or are exempt from registration, according to Regulation (EC) No. 1907/2006 (REACH).

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
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