Safety Data Sheet(SDS)

Revision date : 01-06-2026

1. Identification

1) Product identifier : PG_PYROLYSIS_GASOLINE

2) Relevant identified uses of the substance or mixture and uses advised against

○ Relevant identified uses

1.Raw materials and intermediates, Fuels and additives

○ Restrictions on use

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

3) Supplier information

○ Seller

Company name : Lotte Daesan Petrochem Corporation
Address : 82 Dokgot 1-ro, Daesan-eup, Seosan-si, Chungcheongnam-do
Telephone number : +82-41-689-5114
Emergency phone number : (Control Room) +82-41-689-5119
Fax number : +82-41-689-5985

2. Hazards identification

1) Hazard classification

- Flammable liquids Category 2
- Acute toxicity(Oral) Category 4
- Acute toxicity(Dermal) Category 5
- Skin corrosion/irritation Category 2
- Serious eye damage/eye irritation Category 2
- Skin sensitization Category 1
- Carcinogenicity Category 1A
- Germ cell mutagenicity Category 1B
- Reproductive toxicity Category 2
- Specific target organ toxicity single exposure Category 1
- Specific target organ toxicity single exposure Category 3(Respiratory tract irritation)
- Specific target organ toxicity single exposure Category 3(Narcotic effects)
- Specific target organ toxicity repeated exposure Category 1
- Aspiration hazard Category 1
- Hazardous to the aquatic environment, long-term (chronic) Chronic 2

2) Allocation label elements

Hazard pictograms

Signal word

- DANGER

Hazard statements

H225 Highly flammable liquid and vapour
H302 Harmful if swallowed
H304 May be fatal if swallowed and enters airways
H313 May be harmful in contact with skin
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H319 Causes serious eye irritation
H335 May cause respiratory irritation
H336 May cause drowsiness or dizziness
H340 May cause genetic defects
H350 May cause cancer
H361 Suspected of damaging fertility or the unborn child
H370 Causes damage to organs
H372 Causes damage to organs through prolonged or repeated exposure
H411 Toxic to aquatic life with long lasting effects

Precautionary statements

- 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, 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 nonsparking 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.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a wellventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/…

- Response

P301+P310 IF SWALLOWED: Call a POISON CENTER / toxins center / physician.
P301+P312 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell.
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.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 If exposed or concerned: Get medical advice/attention.
P308+P311 IF exposed or concerned: Call a POISON CENTER/ doctor.
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).
P330 Rinse mouth.
P331 Do NOT induce vomiting.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P333+P313 If skin irritation or a rash 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 dry sand, dry chemical or alcohol-resistant foam for extinction.
P391 Collect spillage.

- Storage

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

- Disposal

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

3) Other hazards:

According to experience and information provided, this product does not affect harmful effects when using and handling it as a regulation.

3. Composition/Information on ingredients

Chemical name	Common name	CAS No.	Content(wt%)
Benzene	Benzole	71-43-2	38.02
Toluene	Methylbenzene	108-88-3	15.74
Cyclopentadiene	cyclopentadiene	542-92-7	6.92
Styrene	Vinylbenzene	100-42-5	5.12

Chemical name	Common name	CAS No.	Content(wt%)
Pentane	pentane	109-66-0	3.57
p-Xylene	p-xylene	106-42-3	3.28
Dicyclopentadiene	Dicyclopentadiene	77-73-6	3.05
Isoprene	isoprene	78-79-5	3
cis,trans-Hexa-1,4-diene	cis,trans-hexa-1,4-diene	592-45-0	2.86
Indene	indene	95-13-6	1.91
Cyclized cis-1,4-polyisoprene	1,3-Butadiene, 2-methyl-, homopolymer, of cis-1,4-co nfiguration, cyclized	68441-13-4	1.89
Cumene	cumene	98-82-8	1.89
Hexane	n-hexane	110-54-3	1.68
α-Methylstyrene	2-phenylpropene	98-83-9	1.59
Butane	butane	106-97-8	1.35
2,3-Dimethylpent-1-ene	2,3-dimethylpent-1-ene	3404-72-6	1.29
Ethylbenzene	ethylbenzene	100-41-4	1.29
2-Methylbut-1-ene	2-methylbut-1-ene	563-46-2	1.19
Octane	octane	111-65-9	1.08
Methyl cyclopentane	methylcyclopentane	96-37-7	1.03
1-Pentene	pent-1-ene	109-67-1	0.98
Methylcyclohexane	methylcyclohexane	108-87-2	0.58
Cyclopentane	cyclopentane	287-92-3	0.46
Cyclopentene	cyclopentene	142-29-0	0.23

4. First-aid measures

1) Following 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.

2) Following skin contact

- For hot product, immediately immerse in or flush the affected area with large amounts of cold water to dissipate

heat.
- For minor skin contact, avoid spreading material on unaffected skin.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to 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.
- Seek immediate medical assistance.
- Wash skin with soap and water.

3) Following 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.
- Give artificial respiration if victim is not breathing.
- If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.
- Keep victim warm and quiet.
- Move to fresh air.

4) Following ingestion
- 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.
- Seek immediate medical assistance.

5) Delayed and immediate effects and also chronic effects from short and long term exposure
- May cause drowsiness or dizziness
- May cause genetic defects
- May cause respiratory irritation
- Suspected of damaging fertility or the unborn child
- Causes damage to organs
- Causes damage to organs through prolonged or repeated exposure
- Causes serious eye irritation
- Causes skin irritation
- Harmful if swallowed
- May be fatal if swallowed and enters airways
- May be harmful in contact with skin
- May cause an allergic skin reaction
- May cause cancer

6) Advice to physician
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Exposures require specialized first aid with contact and medical follow-up .

5. Fire-Fighting measures

1) Suitable (and unsuitable) extinguishing media

○ Suitable extinguishing media

- Dry chemical.
- Regular foam.
- For mixtures containing alcohol or polar solvent: Alcohol-resistant foam.
- CO2.
- Use dry sand or earth to smother fire.
- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Water spray.

○ Unsuitable extinguishing media

- Direct water.
- High-pressure water.

2) Special hazards arising from the substance or mixture

○ Pyrolytic product

- Can decompose at high temperatures forming toxic gases.
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

○ Risk of fire and explosion

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

○ Other

- May cause toxic effects if inhaled.

3) Special protective equipment 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).

6. Accident release measures

1) Personal precautions, protective equipment and emergency procedures
- Please note that materials and conditions to be avoided.
- Prevent dust cloud.
- Stop leak if you can do it without risk.
- The very fine particles can cause a fire or explosion, eliminate all ignition sources.
- A vapor suppressing foam may be used to reduce vapors.
- All equipment used when handling the product must be grounded.
- Clean up spills immediately, observing precautions in Protective Equipment section.
- Cover with plastic sheet to prevent spreading.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Do not touch or walk through spilled material.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Isolate hazard area.
- Keep unnecessary and unprotected personnel from entering.

2) Environmental precautions
- Keep out of waterways.
- Prevent entry into waterways, sewers, basements or confined areas.

3) Methods and materials for containment and cleaning up
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb the liquid and scrub the area with detergent and water.
- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- Dike and collect water used to fight fire.
- Large Spill: Dike far ahead of liquid spill for later disposal.
- Small Spill: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
- Use clean non-sparking tools to collect absorbed material.
- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

7. Handling and storage

1) Precautions for safe handling
- Loosen closure cautiously before opening.
- 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.
- CAUTION: High temperature.
- 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.

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.
- Keep away from food and drinking water.

8. Exposure controls & personal protection

1) Chemical exposure limits, Biological exposure standard

Components	ACGIH regulations	Biological limit values
Benzene	0.5 ppm TWA 2.5 ppm STEL	15 (Methyl Chloroform in Endexhaed Air, Prior to Last Shift of Workweek) 10mg / L (Trichloroacetic Acid in Urine, End of Workweek)
Toluene	20 ppm TWA	0.02 mg / l medium: blood time: prior to last shift of workweek parameter: Toluene; 0.03 mg / l Medium: Uric Time: End of Shift Parameter: Toluene; 0.3 mg / g Creatinine Medium: Urine Time: End of Shift Parameter: Ocresol with Hydrolysis (Background)
Cyclopentadiene	0.5 ppm TWA	No data available
Styrene	10 ppm TWA 20 ppm STEL	400 mg / g Creatinine Medium: Urine Time: End of Shift Parameter: Mandelic Acid Plus Phenylglyoxylic Acid (Nonspecific); 40 µg / l Medium: Urine Time: End of Shift Parameter: Styrene
Pentane	1000 ppm TWA (listed under Pentane, all isomers)	No data available
p-Xylene	100 ppm TWA 150 ppm STEL	No data available
Dicyclopentadiene	0.5 ppm TWA (including cyclopentadiene) 1 ppm STEL (including cyclopentadiene)	No data available
Indene	5 ppm TWA	No data available

Cumene	5 ppm TWA	No data available
Hexane	50 ppm TWA	No data available
α-Methylstyrene	10 ppm TWA	No data available
Butane	1000 ppm STEL (explosion hazard, listed under Butane, isomers)	No data available
Ethylbenzene	20 ppm TWA	0.15 G / G Creatinine Medium: Urine Time: End of Shift Parameter: Sum of Mandelic Acid and Phenylglyoxylic Acid (Nonspecific)
Octane	300 ppm TWA	No data available
Methylcyclohexane	400 ppm TWA	No data available
Cyclopentane	600 ppm TWA	No data available

2) 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.

3) Personal protective equipment

○ Respiratory protection

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

○ Eye protection

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

○ Hand protection

- Wear chemical safety gloves.

○ Skin protection

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

9. Physical and chemical information

Property name	Values	Source
Appearance		
Physical state	Liquid	
Color	yellow	
Odor	hydrocarbon-like;characteristic	

Odor threshold	No data available	
pH	No data available	
Melting point/freezing point	-129 ℃	
Initial boiling point and boiling range(℃)	36℃	
Flash point(℃)	-11 ℃	
Evaporation rate	No data available	
Flammability(solid, gas)	Flammable liquid	
Upper/lower flammability or explosive limits	No data available	
Vapour pressure	71 hPa	
Solubility(ies)	No data available	
Vapour density	No data available	
Relative density	No data available	
n-octanol/water partition coefficient	No data available	
Auto ignition temperature	309 ℃	
Decomposition temperature	No data available	
Viscosity(㎟/s, 40℃)	No data available	
Molecular weight(mass)	No data available	
Density	0.83 g/㎤	
Specific gravity	0.83 (15 ℃)	

10. Stability and hazardous reactivity

1) Chemical stability and Possibility of hazardous reactions

- Some may burn but none ignite readily.
- 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 and/or toxic gases.
- 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.

2) Conditions to avoid

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

3) Incompatible materials
- Combustibles, reducing material.

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

11. Toxicological information

1) Information on the likely routes of exposure

○ Skin Contact
- Liquids can be exposed through the eyes, skin and oral.

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

○ Acute toxicity

● Acute toxicity(Oral) PRODUCT : Category 4(ATEmix = 1160.104mg/kg)

- Hexane
  : LD50 24 ㎖ / kg experimental species: Rat (15,864 mg / kg when converted to OECD TG 401 (unit))
- p-Xylene
  : LD50 3523 ㎎ / kg experimental species: Rat (EU Method B1)
- α-Methylstyrene
  : LD50 4900 ㎎ / kg experimental species: Rat (approximate, male rats, from Study 1956)
- Isoprene
  : LD50 2,125 ㎎ / kg experimental species: Rat
- Cyclopentadiene
  : LD50 113 ㎎ / kg experimental species: Rat (mouse LD50 = 800 mg / kg)
- Cyclopentane
  : LD50> 5000 ㎎ / kg experimental species: Rat (Rat Male / female, no death, OECD Guideline 423)
- Dicyclopentadiene
  : LD50 512 ㎎ / kg experimental species: Rat (rats, male, OECD Guideline 401, GLP)
- Octane
  : LD50> 5000 ㎎ / kg experimental species: Rat (rats, no death, and similar substances CAS No. 540-84-1, OECD TG 401, GLP)
- Pentane
  : LD50> 2000 ㎎ / kg experimental species: Rat (Rat Male / female, OECD Guideline 401, GLP)
- Toluene
  : LD50 5580 ㎎ / kg experimental species: Rat (EU Method B.1)
- Cumene

: LD50 2910 ㎎ / ㎏ experimental species: Rat

- Benzene
: LD50> 2000 ㎎ / ㎏ experimental species: Rat (rats can, OECD TG 401)

- Ethylbenzene
: LD50 3,500 ㎎ / ㎏ experimental species: Rat

- Styrene
: LD50 5000 ㎎ / ㎏ experimental species: Rat (ca. (approximately))

- Acute toxicity(Dermal) PRODUCT : Category 5(ATEmix = 4299.065mg/kg)

- Hexane
: LD50> 3350 ㎎ / ㎏ experimental species: Rabbit

- p-Xylene
: Ministry of Environment(Category 4 : 1100mg/kg)

- α-Methylstyrene
: LD50 14560 ㎎ / ㎏ experimental species: Guinea pig (that died in 16mL, Study from 1975)

- Isoprene
: LD50> 2000 ㎎ / ㎏ experimental species: Rat

- Cyclopentadiene
: LD50 430 ㎎ / ㎏ experimental species: Guinea pig

- Dicyclopentadiene
: LD50> 2000 ㎎ / ㎏ experimental species: Rabbit (OECD Guideline 402, GLP, no deaths)

- Methylcyclohexane
: LD50> 2000 ㎎ / ㎏ experimental species: Guinea pig (OECD Guideline 402)

- Octane
: LD50> 2000 ㎎ / ㎏ experimental species: Guinea pig (no deaths, similar substances CAS No. 540-84-1, OECD TG 402, GLP)

- Toluene
: LD50> 5000 ㎎ / ㎏ experimental species: Rabbit

- Cumene
: LD50 10600 ㎎ / ㎏ experimental species: Guinea pig

- Benzene
: LD50> 8260 ㎎ / ㎏ experimental species: Rabbit ((OECD TG 402))

- Ethylbenzene
: LD50> 20000 ㎎ / ㎏ experimental species: Rabbit (OECD Guideline 402 GLP)

- Styrene
: LD50> 2000 ㎎ / ㎏ experimental species: Rat

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

- Butane
: LC50> 800000 ppm 15 min experimental species: Rat (that death, like substance CAS No. 74-98-6)

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

- Hexane

: LC50 259.354 ㎎ / ℓ 4 hr experiment Species: Rat (OECD TG 403)

- 1-Pentene
: LC50 11000 ㎎ / ㎥ 4 HR

- Methyl cyclopentane
: LC50> 20 ㎎ / ℓ 4 hr experiment Species: Rat

- p-Xylene
: Ministry of Environment(Category 4 : 11mg/L)

- α-Methylstyrene
: LC50 22.85 ㎎ / ℓ 6 hr experiment Species: Rat (Study from 1972)

- Isoprene
: LC50 180 ㎎ / ℓ 4 hr experiment Species: Rat (applied reference gas to a value lower than 90% of the saturated vapor concentration 725,000ppmV)

- Cyclopentadiene
: LD50 39 ㎎ / ℓ 1 hr experiment species: Rat (mouse, LC50, 14g / m3, ChemIDplus mice, LD50, 15mg / L, 1H, HSDB)

- Cyclopentane
: LC50> 25.3 ㎎ / ℓ 4 hr experimental species: Rat (no deaths, OECD Guideline 403 GLPLC50, 14.35mg / L, National Institute for Occupational Safety and Health Hazard Assessment Project, 2009)

- Methylcyclohexane
: LC50> 26.3 ㎎ / ℓ 1 hr experiment species: Mouse

- Octane
: LC50> 24.88 ㎎ / ℓ 4 hr experiment Species: Rat (OECD Guideline 403)

- Pentane
: LC50 364 ㎎ / ℓ 4 hr experiment Species: Rat

- Toluene
: LC50> 20 ㎎ / ℓ experimental species: Rat (OECD TG 403)

- Indene
: LC50 14000 ㎎ / ㎥ 4 hr experiment Species: Rat (in terms of, LC50, 14mg / L, 4H)

- Cumene
: LC50 8000 ppm 8 hr experiment species: Rat (in terms of, LC50, 55.7mg / L, 4H)

- Benzene
: LC50 10000 ppm 7 hr experimental species: Rat (OECD TG 403)

- Ethylbenzene
: LC50 4000 ppm 4 hr experiment Species: Rat (Rat LC50 = 4000 ppm 4 hr corresponding value: 17.8 mg / L (ECHA, HSDB), RD50 = 1432 ppm 6.2 mg / L; EU CLP conditioner Classification Section 4)

- Styrene
: LC50 11.8 ㎎ / ℓ 4 hr experiment Species: Rat

● Acute toxicity(Inhalation:Dust/mist) PRODUCT : Not classified

- Dicyclopentadiene
: LC50 145.5 ppm 4 hr experimental species: Rat (OECD Guideline 403)

○ Skin corrosion/irritation PRODUCT : Category 2

- Hexane
  : Skin irritation test using a mild irritant Rabbit primary irritation index 1.92 OECD TG 404
- Methyl cyclopentane
  : Non-irritating game, rabbit
- p-Xylene
  : Ministry of Environment(Category 2)
- α-Methylstyrene
  : Skin with a rabbit, corrosion / irritation Test Results indicated a slight irritation (4-72 slight erythema and edema can be observed between the time)
- Isoprene
  : The reported being mild in humans.
- 2-Methylbut-1-ene
  : It causes skin irritation.
- Cyclopentane
  : Skin corrosion irritation test using rabbits (OEC TG404), the result is represented by a primary skin irritation index of 0.67 (similar products. 109-66-0)
- Dicyclopentadiene
  : Was the skin corrosion / irritation Test Results reversible erythema and edema using rabbit appears stimulation medium (erythema index: 2, swelling index: 2.3 (OECD Guideline 404, GLP)
- Methylcyclohexane
  : Skin corrosion / irritation test using rabbits results within 72 hours of being a minor irritation that full recovery observed (erythema: 0.5)
- Octane
  : Using the skin corrosion / irritation test rabbits, that stimulation is not restored within 72 hours. Irritation (erythema index = 1, the swelling index = 0), (similar products CAS No. 540-84-1) (OECD TG 404, GLP)
- Pentane
  : Skin with a rabbit, corrosion / irritation Test Results search minor irritation was observed (erythema 0.5, edema: 0.06) (OECD Guideline 404)
- Toluene
  : Ministry of Environment(Category 2)
- Cumene
  : Using a rabbit skin corrosion / irritation Test Results irritation is blank (OECD Guideline 404)
- Cyclopentene
  : In a weak irritant in rabbit
- cis,trans-Hexa-1,4-diene
  : It causes skin irritation.
- Benzene
  : Ministry of Environment(Category 2)
- Ethylbenzene
  : Moderate irritation of skin irritation tests with rabbits

- Styrene
  : Blisters on the skin and hair, such as irritation of the upper secondary level

○ Serious eye damage/eye irritation PRODUCT : Category 2

- Hexane
  : Serious eye damage / irritation tests intended for rabbits and does not cause irritation
- Methyl cyclopentane
  : Irritating in rabbits
- p-Xylene
  : Ministry of Environment(Category 2)
- α-Methylstyrene
  : Serious eye damage / irritation test using rabbits results indicate a slight irritation (also fully recovered in whole stimulation index is 120 hours by 14) (Study from 1972)
- Isoprene
  : The reported being mild in humans. In a weak irritant in rabbit (Hazard Assessment National Institute for Occupational Safety and Health Project (2008))
- 2-Methylbut-1-ene
  : It causes eye irritation
- Cyclopentadiene
  : The substance is irritating to the eyes ttim
- 2,3-Dimethylpent-1-ene
  : Prob. of SEV Ocular Irritancy = 0.998 (TOPKAT; Ocular Irritancy SEV vs MOD)
- Cyclopentane
  : Serious eye damage using rabbit / irritation test (OECD TG405, GLP) results cornea, iris effect is not observed (similar to material 109-66-0)
- Dicyclopentadiene
  : Severe eye within damage / irritation Test Results 1 time, using the rabbit is moderate reversible chemosis, but conjunctival damage 24, 48, there is recovered 72 hours stimulation is not observed (conjunctival swelling index: 0.43 conjunctival index: 0.1) (OECD Guideline 405 , GLP)
- Methylcyclohexane
  : Within serious eye damage / irritation test results 48 hours with a rabbit being mild irritation was observed to be fully recovered (the conjunctiva: 0.3) (OECD Guideline 405)
- Octane
  : Has Serious eye damage / irritation test results, stimulation fully recovered within 48 hours with a rabbit. Unstimulated (index = 0.67 conjunctiva, cornea index = 0, the iris index = 0, conjunctival edema index = 0) (Similar material CAS No. 540-84-1) (OECD TG 405, GLP)
- Pentane
  : Serious eye damage / irritation test with a rabbit being a minor irritant to be fully recovered within 72 hours of observation (conjunctival swelling: 0.33, glowing state: 2.33) (OECD Guideline 405, GLP)
- Toluene
  : Eye irritation test using rabbits are mild and observed other effects not observed

- Butane
  : Serious eye damage / irritation Irritating test results does not appear
- Cumene
  : Serious eye damage / irritation test with rabbits, do not be irritating (OECD Guideline 405)
- Cyclopentene
  : In a weak irritant in rabbit
- cis,trans-Hexa-1,4-diene
  : It may cause eye irritation.
- Benzene
  : Ministry of Environment(Category 2)
- Ethylbenzene
  : Slight irritation to the eyes conjunctival irritation tests in rabbits and there were no corneal damage
- Styrene
  : Some infected rabbit eye, conjunctival irritation effects being observed

○ Respiratory sensitization PRODUCT : Not classified
- No data available

○ Skin sensitization PRODUCT : Category 1
- Hexane
  : Skin sensitization test using mice, not cause sensitization OECD TG 429
- p-Xylene
  : Mouse Local Lymph Node Test OECD TG 429 non-irritable
- Cyclopentadiene
  : Skin Sensitization: Causes skin allergies, contact dermatitis.
- Cyclopentane
  : Guinea pig (female) skin sensitization test results, with no sensitization (like substance CAS No.78-78-4) (OECD Guideline 406, GLP)
- Dicyclopentadiene
  : Skin sensitization test using guinea pig skin sensitization results will not occur (OECD Guideline, 406 GLP)
- Methylcyclohexane
  : Skin sensitization test using guinea pig skin sensitization results are not observed (OECD Guideline 406, GLP)
- Octane
  : Skin sensitization test using guinea pigs results (OECD TG 406), the non-sensitization (similar products: SBP 100/140)
- Pentane
  : Skin sensitization test using guinea pig skin sensitization results are not observed (OECD Guideline 406, GLP)
- Toluene
  : maximization test using guinea pig test results do not appear for skin sensitization on EU Method B.6, GLP
- Cumene
  : Skin sensitization test using guinea pigs results irritation does not appear (OECD Guideline 406)

- Cumene
  : Skin sensitization test using guinea pigs results irritation does not appear (OECD Guideline 406)
- Benzene
  : Using the mouse and guinea pig skin sensitization test, no sensitization
- Styrene
  : maximization sensitization test results with guinea pigs, non-

○ Carcinogenicity PRODUCT : Category 1A

- p-Xylene
  : A4 (ACGIH)
- α-Methylstyrene
  : 2B (IARC)

Hazard Communication Carcinogens (OSHA)

A3 (ACGIH)

2 (Notice of Ministry of Employment and Labor)

- Isoprene
  : Ministry of Environment(Category 1B)
- Toluene
  : 3 (IARC)

A4 (ACGIH)

- Butane
  : 1A (Willing in case of less than 0.1% butadiene) (Notice of Ministry of Employment and Labor)

1A (containing ≥ 0,1% butadiene (203-450-8)) (EU CLP)

- Cumene
  : 2B (IARC)

R (NTP)

2 (Notice of Ministry of Employment and Labor)

- Benzene
  : Ministry of Environment(Category 1)
- Ethylbenzene
  : 2B (IARC)

A3 (ACGIH)

2 (Notice of Ministry of Employment and Labor)

- Styrene
  : 2B (IARC)

R (NTP)

A4 (ACGIH)

2 (Notice of Ministry of Employment and Labor)

○ Germ cell mutagenicity PRODUCT : Category 1B

- Hexane
  : Return bacteria with mutations in vitro microbial tests, regardless of the presence or absence of metabolic

activation system voice GLP, OECD Guideline 471 In vivo chromosomal aberration test results voice

- Methyl cyclopentane
  : in vivo mammalian bone marrow micronucleus test negative

- p-Xylene
  : Reverse mutation test using bacteria in vitro micronucleus test using the OECD TG471 negative results, in vivo mouse bone marrow cells OEF 474, GLP results appear to speech

- α-Methylstyrene
  : Mammals in vivo (mouse) in the micronucleus test positive females with red blood cells, negative (OECD Guideline 474) in males

- Isoprene
  : Ministry of Environment(Category 2)

- Cyclopentane
  : in vitro mammalian chromosome abnormality test negative

- Dicyclopentadiene
  : In vivo micronucleus test using mammalian red blood cells Voice (OECD Guideline 474, GLP)

- Octane
  : Reverse mutation test using microorganisms voice

- Pentane
  : Vitro return with microbial mutation test metabolic activity-based voice or without (OECD Guideline 471, GLP), the chromosome aberration test result in the absence of metabolic activation system using mammalian cultured cells sound (OECD Guideline 473, GLP)

- Toluene
  : Using the in vitro gene mutation test in mammalian cell cultures OECD TG 476, returning with microbial mutation test EU Method B.13 / 14, regardless of the presence or absence of metabolic activation system voice, in vivo chromosomal aberration test results negative

- Butane
  : Without vitro relations within mammals (human) chromosome aberration test results of metabolic activation system or without voice (OECD Guideline 473, GLP), reverse mutation test results of metabolic activation system voice (OECD Guideline 471) or without using an in vitro microbial, biological micronucleus test using a test in Drosophila SLRL voice, in vivo mammalian (rat) red blood cells voice (OECD Guideline 474, GLP) * EU CLP: 1B (only in case of not less than 0.1% butadiene)

- Cumene
  : In vivo micronucleus test using mammalian red blood cells Voice (OECD Guideline 474, GLP)

- Benzene
  : Ministry of Environment(Category 1)

- Ethylbenzene
  : Mouse genetic toxicity test Using lymphoma L5178Y cell results voice, Chinese hamster Ovary; chromosomal aberration results using CHO cells negative test, OECD TG476, GLP, OECD TG 473 mouse bone marrow cells to Unscheduled DNA using a micronucleus test mammal liver with voice synthesis; UDS test negative, OECD TG474, OECD TG486, GLP

- Styrene

: In vitro reverse mutation test using bacteria OECD TG 471 the result is positive, in vitro sister chromosome exchange test using mammalian cell OECD TG 479 the result is positive, in vivo mouse sister with chromosomes exchange test results with rats exposed to inhaled benign, C14- styrene and mouse liver, lung and positive DNA adduct formed in the quantitative test results classified lung cells, positive for cytogenic testing using a rodent inhalation exposure to styrene

○ Reproductive toxicity PRODUCT : Category 2

- Hexane

: Test Acute inhalation targeting the rat toxicity results, search testicular customs contraction of rats in 5000ppm This observation was, the testicular lesions in a wide range could not be recovered in the recovery period of observation, were observed weight gain and food intake reduction which the initial neurological disorders accompanying box (LC50 (Wed)> 5000ppm) was the (OECD Guideline 403) targeting the mouse embryo toxicity / teratogenicity test results, the object uterine weight reduction was conceived in the 200 and 5000ppm concentration group observed decreased number of implantation at 5000ppm concentration group, the concentration of 200ppm increased significantly the incidence of intrauterine death (NOAECmaternal toxicity = 1000ppm)

- p-Xylene

: Rats second-generation reproduction toxicity (repeated exposure inhalation, EPA OPPTS870.3800) toxic effects associated with the test result reproduction and development to the highest concentration tested (500ppm) was not observed. BMCL10 to NOAEC (reproduction / development / parent toxicity)> = developmental inhalation toxicity test using 500 ppm rats (OECD TG414) results BMCL10 (development), the reduction of the new character weight = 5761 mg / ㎥, maternal weight loss (maternal toxicity) = 2675mg / ㎥

- α-Methylstyrene

: Neonatal mortality was observed reproductive toxicity test results in the 1000mg / kg group using rats, the newborn appears reduced and low survival rate of weight (NOEL = 200mg / kg bw / day) (OECD Guideline 422, GLP)

- Cyclopentane

: Rats (male / female) reproductive toxicity test results using, salivation, female weight loss, high volume days if the children of survival decreases discovered (like substance CAS No.110-82-7) (OECD Guideline 416, GLP) using rats developmental toxicity / teratogenicity test results have not found an unusual symptoms (like substance CAS No.109-66-0) (OECD Guideline 414, GLP)

- Dicyclopentadiene

: Developmental toxicity test Using rat lung congestion, adrenal-up and also bleeding of the mucous membrane and thymus generated above (developmental toxicity NOAEL = 20 mg / kg) (OECD Guideline 422, GLP) using rat maternal toxicity / teratogenicity test results much no effect (NOAEL = 750ppm maternal toxicity, teratogenicity NOAEL = 750ppm) ((EPA OPP 83-3)

- Methylcyclohexane

: Using rat reproductive / developmental toxicity screening test and the combination result of the repeated toxicity test No harmful effects observed (LOAEL = 250 mg / kg bw / day) (OECD TG 422, GLP)

- Octane

: - inhalation using a rat 2-generation reproductive toxicity test results, milk food consumption significantly decreased feed. Food consumption decreased in the period of conception. Glassy kidney volume from males (Hyaline droplet nephropathy) and tubular basophilic erythrocyte Hyperleukocytosis of (tubular basophilia). In high concentrations may increase cub mortality groups. (NOAEL (reproductive toxicity) = 31,680mg / m³ air (nominal), NOAEL (other: F1, F2, male / female) = 10,560 mg / m³ air (nominal), LOAEL (other: F1, F2, male / female) = 31,680 mg / m³ air (nominal)) (Similar materials: commercial hexane) (OECD TG 416, GLP) - inhalation fetal development in rats intended for toxicity testing results, maternal weight loss. Any remaining effects (NOAEC (toxic maternal toxicity) = ca 2,000 ppm, NOAEC (development)> 7 000 ppm.) (Similar substances: Cyclohexane) (OECD TG 414, GLP)

- Pentane

: Rats (male / female), not two days generation reproductive toxicity test that targets the harmful effects not observed (NOAEL> = 1 000 mg / kg bw / day) (OECD Guideline 415, GLP)

- Toluene

: Ministry of Environment(Category 2)

- Butane

: Results reproduction toxicity test using rats does not appear significant abnormality related to the reproduction and development (OECD Guideline 422, GLP)

- Cumene

: Developmental toxicity test using rats results, 500 and 1200 ppm, kidney, increase of the adrenal glands liver (NOAEL => = 1 200 ppm) of (OECD Guideline 413, GLP) rabbit teratogenicity / maternal toxicity test food consumed by increasing the rate of reduction and moving humid and color changes in the lung occur (NOAEL = 2 300 ppm) (OECD Guideline 414, GLP)

- cis,trans-Hexa-1,4-diene

: Reproductive toxicity does not appear

- Benzene

: ○ developmental toxicity: search (maternal toxicity), reported in this case natural abortion is observed as reported (developmental toxicity) delayed growth of the fetal crown to rump length of the reduction and the skeleton during 7hr / day exposure to 500ppm concentration of the rabbit . Benzene was also detected in 24HOUR / DAY condition 6-15 days 154, of the matrix upon exposure to a concentration of 308ppm amniotic fluid and fetal blood intended for CFLP mice and rabbits NZ search skeletal growth delay observed in fetal 308ppm concentration. Through this classification in Category 2 ○ inhalation developmental toxicity tests using rats teratogenic, not in the best nongdong evidence of teratogenicity was observed. NOAEC = 32 mg / m3 air (OECD TG 414, GLP)

- Ethylbenzene

: Second-generation inhalation reproductive toxicity studies using rats (OECD TG416, GLP) adverse effects associated with reproductive or developmental outcomes up to 500ppm is not observed. NOEL for parental systemic toxicity due to weight loss, increased liver weight, etc. NOEL = 100 ppm. Inhalation developmental toxicity test using rats (EOCD TG414, GLP) deformities influence the result to 2000ppm is not observed. 1000, or a new party appears weak weight loss at 2000 ppm. Maternal toxicity body weight and feed consumption decreased in 1000 and 2000ppm. NOAEL (teratogenicity) = 2000ppm, NOAEL (maternal /

developmental toxicity) = is shown as 500ppm.

- Styrene

: Of 11, 17, 23 μmol / kg (1.90 to 3.98 mg / kg): targeting taehan hamster oral: 23, 58, 80, 90, 100, 110 μmol / kg (3.98 to 19.0 mg / kg), i.v. concentration developmental toxicity / teratogenicity test in (oral and intravenous injection), result, eight days in once a maternal toxicity, including death / lethargy / weight loss in a high concentration was observed upon exposure, concentration of at least 90 μmol / kg once- type fetal ratio hayeoteum increases, the absorption rate is 100 μmol /

○ Specific target organ toxicity single exposure PRODUCT : Category 1, Category 3(Respiratory tract irritation), Category 3(Narcotic effects)

- Hexane

: In people with Acute inhalation toxicity appears in the central nervous system such as dizziness or suppressed. Appears to pray stimulate TARGET ORGANS: central nervous system

- Methyl cyclopentane

: Inhalation If irritation prayer

- p-Xylene

: Ministry of Environment(Category 3(Narcotic effects))

- α-Methylstyrene

: Acute oral toxicity test using a rat was observed unstable gait, renal disease, etc. is observed to stain spotting, stomach expansion death occurs, upon autopsy lungs in 16mL group, liver and spleen (LD50 = 5.915mg / kg bw), rabbit the acute dermal toxicity test results appetite and activity reduction, weight reduction observed (MLD> 7940mg / kg bw), acute inhalation toxicity test results, some deaths caused by the rat eye within 5 minutes using wound, was worse condition within 90 minutes, was unconscious in less than 240 minutes, it became the anesthesia within 5 hours, death within seven hours (mortality = 41600mg / m3 air (8h)) in human upper respiratory tract irritation, lung damage in experimental animals, cooperative ataxia, weakness, this sense of loss as reported

- Isoprene

: In person affects the central nervous system, respiratory function or decreased consciousness, burning, eliminating, dizziness, nausea, search shortness of breath, sore throat this report.

- 2-Methylbut-1-ene

: Irritating Inhalation prayer. Causes symptoms of drunkenness

- Cyclopentadiene

: Material will cause irritation to the respiratory system the substance occurs irritation of the mucous membranes and No. Black Flag

- Cyclopentane

: Rats (male / female) acute oral toxicity test results and any symptoms is not found (like substance CAS No.109-66-0) (OECD TG 401, GLP) Acute inhalation toxicity using rats (male / female) with the test results , one male deaths (14), found excessive sexual behavior disorders (first exposure to two hours), lung cancer, acute toxic effects are detected kidney (OECD TG 403) does not apply to the classification in this topic

- Dicyclopentadiene

: Inhalation toxicity test using rats results that this limb paralysis, kidney, respiratory system, liver damage caused

- Methylcyclohexane
  : Rats, mice with acute inhalation toxicity test activity increased hyperactivity, coordination loss, exhaustion, central nervous system depression, diarrhea, anesthesia was observed being becomes the place prone observed in search mouse to see the effects on the central nervous system. Rabbits the action being observed tARGET oRGANS: central nervous system
- Octane
  : Anesthetic and convulsions are reported at high concentrations. Target Organ: Central Nervous System; EU CLP Classification: Classification 3 (Anesthetic Action)
- Pentane
  : Acute exposure tests using mice loss of consciousness, decreased movement, respiratory arrest, reflecting restrained, anesthetized, etc. must observe the search, stimulate changes, drowsiness, headache, nose noebu EEG surface
- Toluene
  : Ministry of Environment(Category 3(Narcotic effects))
- Butane
  : Acute inhalation toxicity test results suppress the central nervous system using a mouse, fast shallow breathing, apnea symptoms observed (LC50 (120min) = 1237mg / L air), not shown toxicity in acute toxicity tests using rabbits eyes
- Cumene
  : Acute toxicity tests using rats, was not observed as much weight loss have only affected central nervous system toxicity, effects on the liver, kidney, leukocyte effects, anesthetic effects, respiratory tract is Reported
- cis,trans-Hexa-1,4-diene
  : Inhalation Irritating to pray
- Benzene
  : Bleeding between the lungs (Congestion) inhalation toxicity results were a decrease in the number of T lymphocytes in the spleen the number of bone marrow B cells also reduced men in the skin, rain, nine, irritation of the pharynx, gigwanyeom, laryngitis, bronchitis , hemorrhage of the lungs ※ target organ: respiratory system. Central nervous system, hematopoietic system
- Ethylbenzene
  : In experimental animals causes the nervous system effects such as dizziness and airway irritation.
- Styrene
  : Respiratory irritation, central nervous system effects, signs of lung irritation appears organs: central nervous system

○ Specific target organ toxicity repeated exposure PRODUCT : Category 1

- Hexane
  : That this weight gain decreases as the test repeated to target the rats administered oral toxicity result, 13.2 mmol / kg and 46.2mmol / kg concentration group of the two objects is also administered immediately mortality, decreased feed consumption, being the testis epithelium atrophy observed, axonal incorporation of projections edema, axonal plants were observed appear care line self-study toxicity such as the node connection seconds is contracted, after administration at 46.2 mmol / kg concentration group neurotoxicity,

such as hind limb paralysis was observed search can NOAEL = 6.6 mmol / kg bw, NOAEL neurological sub-chronic inhalation effects can target = 13.2 mmol / kg bw mouse toxicity: 90-day trial results, 1000, decreased weight of 10000ppm the concentration of military male objects, weight of the female object of 10000ppm concentration too reduced hayeoteum, hayeoteum significantly increase the neutrophil fragments of a male object, increased heart weight, kidney and liver of females objects largest symptoms include nose can damage NOAEL = 500 ppm OECD TG 413 tARGET oRGANS: nervous system

- Methyl cyclopentane

: - NOAEL 4.47 ㎎ / ℓ (Rat) - 13 weeks in the animal experiment repeated inhalation exposure results the highest concentration group (20.21 ㎎ / ℓ) and a toxicologically symptoms significantly, except for a flexible reaction observed is not observed

- p-Xylene

: Ministry of Environment(Category 1)

- α-Methylstyrene

: Repeated using the rat oral toxicity test one animal died at 1000mg / kg group, salivation, activity decreases, observable hematuria observed and hair loss symptoms, increased inhibition observed, GPT weight gain element increased nitrogen and potassium, and triglyceride reduction and long-term weight increase observed, liver and kidneys enlarge, thymus atrophy, testicular atrophy, pulmonary edema, splenic atrophy observed (NOEL = 40mg / kg bw / day) (OECD Guideline 422, GLP) (ECHA), repeated inhalation toxicity test using guinea pigs (14 weeks) results kidney weight gain, increased by hyaline droplet accumulation in the kidneys observed (NOAEC = 300ppm) (OECD Guideline 413, GLP)

- Isoprene

: - NOAEL 20.3 ㎎ / ℓ (Rat) - 13 weeks in the animal experiment repeated inhalation exposure results significant toxicological symptoms are not observed

- Cyclopentadiene

: Chronic oral repeated toxicity to target the rat tests, liver and kidney cells, and swelling found in central New Minister of hematologic a negative effect in reducing human allergic asthma, rhinitis, hypersensitivity respiratory syndrome in the epithelial cells of the lobules, tuberculosis pills, the influence due to sneezing, epistaxis, relieve, repeated exposure of the acute respiratory distress syndrome, anemia due to toxicity, asthma, stimulation does not apply to the classification in the present entry

- Cyclopentane

: Rats repeated using the (male / female) Inhalation toxicity tests, specific symptoms are not detected (OECD Guideline 413) Toxicity (repeated exposure): NOAEL 15.49 ㎎ / ℓ (Rat) test animals 13 weeks repeated inhalation exposure in results significant toxicological symptoms are not observed

- Dicyclopentadiene

: Test repeated reproductive development combined with rat toxicity (OECD TG422, GLP) results observed histopathologic abnormalities in the kidneys and adrenal glands in males, females are underweight, feed consumption decreases, liver and NOAEL (male) = 4 Height to pathologic changes the toxic effects observed related to mg / kg bw / day, NOAEL (female) = 20 mg / kg bw / day (ECHA), 90-day repeated inhalation toxicity test (OECD TG413) result test substance far tested up to a concentration using the rat not . NOAEC = 50 ppm (276 mg / m3)

- Methylcyclohexane
  : Using rat reproductive / developmental toxicity screening test and the combination result of the deleterious effects in addition salivation repeated toxicity test was not observed (LOAEL = 250 mg / kg bw / day) (OECD TG 422, GLP)

- Octane
  : Rats (number of) target by repeated dose inhalation toxicity test results, no special effects observed up to the highest concentration (NOAEC> 14 000 mg / m³ air (nominal)) (GLP)

- Pentane
  : Inhalation toxicity test results from the rat to the destination does not have harmful effects observed (NOAEC = 20,000mg / m³ air) (OECD Guideline 413, GLP)

- Toluene
  : Ministry of Environment(Category 2)

- Butane
  : Repeated using rat inhalation toxicity tests (4 weeks) Result No significant abnormality in addition to weight loss (NOAEC = 4000ppm) (OECD Guideline 422, GLP)

- Cumene
  : Repeated using rat toxicity study (6 hours per day for 13 weeks exposure) results, renal proximal tube enlargement at 500 and 1,200 ppm, proliferation, and formation of hyaline drop

- Benzene
  : Ministry of Environment(Category 1)

- Ethylbenzene
  : 13 week repeated oral toxicity test weak playback anemia based on the hematological changes, between the weight increase and centrilobular hepatocytes hypertrophy change indicating NOAEL = 75 mg / kg bw / dayOECD TG408, GLP Using rats, 13 with ECHA mouse weeks Repeat inhalation toxicity test results show that the liver and kidney weight increase in 750ppm3.55 mg / L or more nateu or other tissue pathology or adverse effects are not observed NOAEC = 1000ppm4.74mg / LOECD TG413, inhalation neurotoxicity using ECHA rats result of repeated exposure to the suction 4 -13 weeks, 200-800ppm concentration to confirm that the OECD TG424 after stopping exposure above 400ppm concentration not the hearing threshold recovery to eight weeks. 8 OHC loss of the main recovery time is increased 200-800ppm severe to 4%, and 100%, respectively. LOAEL = 200ppm

- Styrene
  : It repeated using the mouse oral toxicity test of 100 mg / kg bw / day affect over bronchioles distal epithelial cells from three horses in the observations, 100 or 200 mg / kg group s-phrase increased significantly the frequency of cells in the distal trachea at the NOAEL search = 10 mg / kg bw / day for 13 weeks mice repeated inhalation toxicity test results GLP histopathologic abnormalities infections, liver fibrosis and liver cells lose 2-5, the male in the female group 200ppm 150ppm groups using this observation. In all exposure groups being observed abnormal lung nasal or more, 100ppm or more. NOAEC = 0.21 mg / L, using a rat 13 weeks repeated inhalation toxicity test NOAEL = 200 ppm for the toxicity to the hearing loss in the high-concentration 800ppm

○ Aspiration hazard PRODUCT : Category 1

- Hexane
  : Aspiration hazard: a small amount when a hydrocarbon, tie viscosity 20.5 mm2 / s or less 40 ℃, suction may cause even serious damage to the lung (chemical pyeoryeom). EU CLP harmonized classification Category 1

- p-Xylene
  : Aspiration toxicity: hydrocarbons, search tie viscosity 0.603 mPa s 25 ℃ swallowing the liquid, and reporting the risk of chemical pneumonia by ohyeon

- α-Methylstyrene
  : Aspiration toxicity: hydrocarbons, tie viscosity is 1.032 mm2 / s (20 ℃)

- Dicyclopentadiene
  : Dynamic viscosity: 1-5 mPa s (at 20 ℃), but polycyclic hydrocarbon corresponding to the tie viscosity, industrial goods is much monocyclic materials include (cyclopentadienyl)

- Methylcyclohexane
  : Viscosity: 0.679mPas hydrocarbons, and the equalizer being the viscosity at 40 ℃ at 20 ℃ to about 679 mPas 20.5 mm2 / s or less.

- Octane
  : The risk of pneumonia is reported. It is hydrocarbon, and the tiebility is 0.735 mm 2 / s EU CLP Classification Category 1

- Pentane
  : Viscosity: 0.2224mPa s (25 ℃) hydrocarbons, and the equalizer being the viscosity is 0.374 mm2 / s at 20 ℃. / Person exposure studies / aspiration is also cause chemical pneumonia or pulmonary edema

- Toluene
  : Ministry of Environment(Category 1)

- Cumene
  : Aspiration toxicity: hydrocarbons, tie viscosity 20.5 mm2 / s or less

- Benzene
  : Ministry of Environment(Category 1)

- Ethylbenzene
  : Hydrocarbons. It may cause chemical pneumonia if swallowed by a liquid to ohyeon. Tie viscosity 0.64 ㎟ / s 25 ℃

- Styrene
  : hydrocarbon. It may cause chemical pneumonia if swallowed by a liquid to ohyeon. Tie viscosity 0.696 mPa / s 25 ℃

12. Ecological information

1) Ecotoxicity

- Fish

  - Hexane
    : LC50> 1 ㎎ / ℓ 48 hr Oryzias latipes (no guideline followed, [additional information] ECHA harmonized classification chronic aquatic environment hazard category 2)

- 1-Pentene
  : LC50 12.461 ㎎ / ℓ 96 hr
- Methyl cyclopentane
  : LC50 2.25 ㎎ / ℓ 96 hr
- p-Xylene
  : LC50 2.6 ㎎ / ℓ 96 hr Other (OECD Guideline 203)
- α-Methylstyrene
  : LC50 2.97 ㎎ / ℓ 96 hr Other (Danio rerio, OECD Guideline 203, GLP)
- Isoprene
  : LC50 75 ㎎ / ℓ 96 hr
- 2-Methylbut-1-ene
  : LC50 3.551 ㎎ / ℓ 96 hr
- 2,3-Dimethylpent-1-ene
  : LC50 2.81 ㎎ / ℓ 96 hr (ECOSAR Class: Neutral Organics)
- Cyclopentane
  : LC50 4.26 ㎎ / ℓ 96 hr Oncorhynchus mykiss (Static renewal, similar products CAS No.109-66-0, OECD Guideline 203, GLP)
- Dicyclopentadiene
  : LC50 157 ㎎ / ℓ 96 hr Ictalurus punctatus (Macroinvertebrate and fish toxicity tests followed the recommended bioassay procedures as described in the Methods for Acute Toxicity Tests with Fish, Macro invertebrates, and Amphibians)
- Methylcyclohexane
  : LC50 2.07 ㎎ / ℓ 96 hr Oryzias latipes (Formula ring)
- Octane
  : LC50 0.885 ㎎ / ℓ 96 hr Other (Fresh Water Fish, EU CLP Classification Category 1)
- Pentane
  : LC50 4.26 ㎎ / ℓ 96 hr Oncorhynchus mykiss (ring formulas, OECD Guideline 203, GLP)
- Toluene
  : LC50 5.5 ㎎ / ℓ 96 hr Oncorhynchus kistutch
- Butane
  : LC50 27.98 ㎎ / ℓ 96 hr other (similar products CAS no.74-28-5)
- Cumene
  : LC50 4.7 ㎎ / ℓ 96 hr Other (Cyprinodon variegatus, EPA OTS 797.1400, GLP)
- Cyclopentene
  : LC50 18.259 ㎎ / ℓ 96 hr
- cis,trans-Hexa-1,4-diene
  : LC50 2.873 ㎎ / ℓ 96 hr
- Benzene
  : LC50 5.3 ㎎ / ℓ 96 hr Oncorhynchus mykiss (OECD Guideline 203)
- Ethylbenzene
  : LC50 5.1 ㎎ / ℓ 96 hr
- Styrene
  : LC50 10 ㎎ / ℓ 96 hr Pimephales promelas (OECD Guideline 203. GLP)

● Crustaceans
- Hexane

: LC50 21.85 ㎎ / ℓ 48 hr Daphnia magna

- 1-Pentene

: LC50 13.975 ㎎ / ℓ 48 hr

- Methyl cyclopentane

: LC50 6.67 ㎎ / ℓ 48 hr

- p-Xylene

: LC50 3.6 ㎎ / ℓ 24 hr Other (OECD TG 202)

- α-Methylstyrene

: EC50 1.64 ㎎ / ℓ 48 hr Daphnia magna (OECD Guideline 202, GLP)

- Isoprene

: EC50 3.2 ㎎ / ℓ 48 hr

- 2-Methylbut-1-ene

: LC50 12.342 ㎎ / ℓ 48 hr

- 2,3-Dimethylpent-1-ene

: LC50 2.015 ㎎ / ℓ 48 hr (ECOSAR Class: Neutral Organics)

- Cyclopentane

: LC50 4.659 ㎎ / ℓ 48 hr Other (Daphnia sp.)

- Dicyclopentadiene

: EC50 4.2 ㎎ / ℓ 48 hr Daphnia pulex (other guideline: ASTM (1980) E728-80)

- Methylcyclohexane

: EC50 0.326 ㎎ / ℓ 48 hr Daphnia magna (Formula ring)

- Octane

: EC50 0.18 ㎎ / ℓ 48 HR Daphnia Magna (EU CLP Classification: Category 1)

- Pentane

: LC50 9.1 ㎎ / ℓ 48 hr Daphnia magna (index type)

- Toluene

: EC50 3.78 ㎎ / ℓ 48 hr Ceriodaphnia dubia

- Butane

: LC50 69.43 ㎎ / ℓ 48 hr Other (Daphnia sp., Similar products CAS no.74-28-5)

- Cumene

: EC50 2.14 ㎎ / ℓ 48 hr Daphnia magna (OECD Guideline 202, GLP)

- Cyclopentene

: LC50 20.210 ㎎ / ℓ 48 hr Other (Daphinid)

- cis,trans-Hexa-1,4-diene

: LC50 9.103 ㎎ / ℓ 48 hr

- Benzene

: EC50 10 ㎎ / ℓ 48 hr Daphnia magna (water flea toxicity: EC50 = 20.6ppm, Academy of OECD TG 202 48h National Environment)

- Ethylbenzene

: LC50 1.8 ㎎ / ℓ 48 HR Daphnia Magna (Ceriodaphnia Dubia NOEC 1.0 mg / L (0.96 mg / L) 7days)

- Styrene

: EC50 4.7 ㎎ / ℓ 48 hr Daphnia magna (OECD TG 202, GLP)

- Aquatic algae

- 1-Pentene

: EC50 9.075 ㎎ / ℓ 96 hr

- Methyl cyclopentane

: EC50 4.44 ㎎ / ℓ 96 hr

- p-Xylene

: EC50 4.06 ㎎ / ℓ 72 hr Other (OECD TG201, GLP)

- α-Methylstyrene

: ErC50 11.441 ㎎ / ℓ 72 hr Other (Desmodesmus subspicatus, OECD Guideline 201, GLP)

- 2-Methylbut-1-ene

: EC50 8.030 ㎎ / ℓ 96 hr

- 2,3-Dimethylpent-1-ene

: EC50 1.938 ㎎ / ℓ 96 hr (ECOSAR Class: Neutral Organics)

- Cyclopentane

: EC50 3.415 ㎎ / ℓ 96 hr other (green algae)

- Dicyclopentadiene

: EbC50 27 ㎎ / ℓ 72 hr Other (Pseudokirchnerella subcapitata, OECD Guideline 201)

- Methylcyclohexane

: ErC50 0.134 ㎎ / ℓ 72 hr Other (Pseudokirchneriella subcapitata, exponential type)

- Octane

: EC50 0.9 ㎎ / ℓ 72 HR Guitar (Freshwater Algae)

- Pentane

: ErC50 10.7 ㎎ / ℓ 72 hr Selenastrum capricornutum (index expression, OECD Guideline 201, GLP)

- Toluene

: EC50 134 ㎎ / ℓ 3 hr Chlorella vulgaris (EC10 and NOEC: 10 mg / L)

- Butane

: EC50 16.47 ㎎ / ℓ 96 hr other (Green algea, similar products CAS no. 74-84-0)

- Cumene

: ErC50 2.01 ㎎ / ℓ 72 hr Other (Desmodesmus subspicatus, OECD Guideline 201, GLP)

- Cyclopentene

: EC50 12.981 ㎎ / ℓ 96 hr other (Green algae)

- cis,trans-Hexa-1,4-diene

: EC50 6.007 ㎎ / ℓ 96 hr

- Benzene

: EC50 29 ㎎ / ℓ 72 hr Selenastrum capricornutum (Selenastrum capricornutum, EC50 = 32 mg / L 72h, ECHA)

- Ethylbenzene

: EC50 2.6 ㎎ / ℓ 96 hr Other (Marine Invertebrate)

- Styrene

: EC50 4.9 ㎎ / ℓ 72 hr Selenastrum capricornutum (EPA OTS 797.1050, GLP)

2) Persistence and degradability

- Degradability

  - Toluene

  : (Evaporation without being adsorbed on the precipitate in water or biodegradable search (BOD: 80%, 20-yl))

  - Benzene

  : (Decomposed in anaerobic conditions)

- Biodegradation

  - Hexane

  : 98% 28 day (similar products: 64742-49-0 OECD TG F 301, GLP)

- p-Xylene
  : 90% 28 day (OECD TG301F, GLP)
- Cyclized cis-1,4-polyisoprene
  : (Not considered to be a useful material for biodegradability recalcitrant)
- α-Methylstyrene
  : 21% 28 day (OECD Guideline 301 F, GLP)
- Isoprene
  : 2 (%)
- 2,3-Dimethylpent-1-ene
  : (Cut-off value = 0.4324; recalcitrant (BIOWIN 6))
- Cyclopentane
  : 0% 28 day (28 days does not decompose in CO2 emissions 0%, and the measurement environment, OECD TG301F, GLP)
- Dicyclopentadiene
  : 0% 28 day (recalcitrant, OECD TG301F, GLP)
- Methylcyclohexane
  : 0% 28 day (OECD Guideline 301 D, GLP)
- Octane
  : 70.3% 10 Day
- Pentane
  : 81% 28 day (OECD Guideline 301 F, GLP)
- Toluene
  : 80% 20 day (rapid degradation)
- Butane
  : 100% 385.5 hr (similar products CAS No. 74-84-0)
- Cumene
  : 2% 60 day (recalcitrant)
- Benzene
  : 50% 28 day (decomposed (NITE) in oxygen-free conditions)
- Ethylbenzene
  : 80% ~ 70% 28 day (ISO 14593 CO2 headspace test, GLP)
- Styrene
  : 100% 28 day (ISO DIS 9408 aerobic biodegradation tests, GLP)

3) Bioaccumulative potential

- n-octanol water partition coefficient
  - Hexane
    : 4 log Kow (20 ° C, pH = 7)
  - 1-Pentene
    : 2.66 log Kow
  - Methyl cyclopentane
    : 3.37 log Kow
  - p-Xylene
    : 3.15 log Kow
  - α-Methylstyrene
    : 3.48 log Kow
  - Isoprene

: 2.3 log Kow
- 2-Methylbut-1-ene
: 2.72 log Kow
- 2,3-Dimethylpent-1-ene
: 3.63 log Kow
- Cyclopentane
: 3 log Kow
- Dicyclopentadiene
: 0.94 log Kow
- Methylcyclohexane
: 3.88 log Kow
- Octane
: 5.15 Log Kow
- Pentane
: 3.45 log Kow
- Toluene
: 2.73 log Kow
- Indene
: 2.92 log Kow
- Butane
: 2.89 log Kow
- Cumene
: 3.55 log Kow
- Cyclopentene
: 2.47 log Kow
- cis,trans-Hexa-1,4-diene
: 2.94 log Kow
- Benzene
: 2.13 log Kow
- Ethylbenzene
: 3.15 log Kow
- Styrene
: 2.95 log Kow

• Bioconcentration factor(BCF)
- Hexane
: 125
- 1-Pentene
: 22
- Methyl cyclopentane
: 210
- α-Methylstyrene
: 140 ~ 15 (OECD Guideline 305 C)
- Isoprene
: 20
- 2-Methylbut-1-ene
: 25

- 2,3-Dimethylpent-1-ene
  : 115.4
- Dicyclopentadiene
  : 384
- Methylcyclohexane
  : 321 ~ 95 (L / kg)
- Octane
  : 198.7
- Pentane
  : 171 (predicted)
- Toluene
  : 90
- Cumene
  : 35.5
- Cyclopentene
  : 15.9
- cis,trans-Hexa-1,4-diene
  : 36.41
- Benzene
  : 43.2 ~ 5.88 (30fresh water, green algae, 3.5 conger, 4.3 gold fish)
- Ethylbenzene
  : 1 (BCF)
- Styrene
  : 74

4) Mobility in soil

- Hexane
  : Koc 2187.76 (QSAR)
- Methyl cyclopentane
  : 1600
- p-Xylene
  : Blanket 540 ~ 246 Blanket
- 2-Methylbut-1-ene
  : 68
- 2,3-Dimethylpent-1-ene
  : 1413 (which can be absorbed into the soil)
- Benzene
  : Koc 134.1 (QSAR)
- Ethylbenzene
  : (Log koc = 2.41, measured)
- Styrene
  : Blanket 352

5) Other adverse effects

No data available

13. Disposal considerations

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

2) Precautions (including disposal of contaminated container of package)
   - Dispose of in accordance with local regulations.
   - Send to a licensed waste management company.

14. Transport information

1) UN No. : 3295

2) Proper shipping name : HYDROCARBONS, LIQUID, N.O.S.

3) Hazard class : 3

4) Packing group : II

5) Marine pollutant : No

6) Special precautions for user related to transport or transportation measures :

Emergency measures in case of fire : F-E

Emergency measures in the effluent : S-D

- ADR

· Tunnel restriction code : D/E

- IMDG

· Marine pollutant : No

- Air transport(IATA)

· UN No. : 3295

· Proper shipping name : HYDROCARBONS, LIQUID, N.O.S.

· Class or division : 3

· Packing group : II

15. Regulatory information

Australia Industrial Chemicals Notification and Assessment Act

- Inventory - Australia - Inventory of Industrial Chemicals (AIIC)

- Hexane : Present

- 1-Pentene : Present

- Methyl cyclopentane : Present

- p-Xylene : Present

- Cyclized cis-1,4-polyisoprene : Present

- α-Methylstyrene : Present

- Isoprene : Present

- 2-Methylbut-1-ene : Present

- Cyclopentadiene : Present

- Cyclopentane : Present

- Dicyclopentadiene : Present

- Methylcyclohexane : Present

- Octane : Present

- Pentane : Present

- Toluene : Present

- Indene : Present

- Butane : Present

- Cumene : Present

- Cyclopentene : Present

- Benzene : Present (Specific information requirement: Obligations to provide information apply. You must tell us within 28 days if the circumstances of your importation or manufacture (introduction) are different to those in our assessment.)

- Ethylbenzene : Present

- Styrene : Present

China Inventory of Existing Chemical Substances (IECSC)

- Inventory - China - Inventory of Existing Chemical Substances (IECSC)

- Hexane : Present [41413]

- 1-Pentene : Present [35208]

- Methyl cyclopentane : Present [18806]

- p-Xylene : Present [06716]

- Cyclized cis-1,4-polyisoprene : Present [32395]

- α-Methylstyrene : Present [01558]

- Isoprene : Present [18537]

- 2-Methylbut-1-ene : Present [18607]

- Cyclopentadiene : Present [14783]

- Cyclopentane : Present [14790]

- Dicyclopentadiene : Present [09404]

- Methylcyclohexane : Present [18787]

- Octane : Present [35830]

- Pentane : Present [35206]

- Toluene : Present [16691]

- Indene : Present [40876]

- Butane : Present [41372]

- Cumene : Present [40401]

- Cyclopentene : Present [14791]

- cis,trans-Hexa-1,4-diene : Present [16404]

- Benzene : Present [01506]

- Ethylbenzene : Present [38114]

- Styrene : Present [02766]

92/32/EEC

- Not applicable

European Union Official Journal of the European Communities 15 June 1990 - Annex Based on Article 13 of Directive 67/548/EEC Amended by Directive 79/831/EEC

- Inventory - European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)

- Hexane : 203-777-6

- 1-Pentene : 203-694-5

- Methyl cyclopentane : 202-503-2

- p-Xylene : 203-396-5

- α-Methylstyrene : 202-705-0

- Isoprene : 201-143-3

- 2-Methylbut-1-ene : 209-250-7

- Cyclopentadiene : 208-835-4

- 2,3-Dimethylpent-1-ene : 222-285-2

- Cyclopentane : 206-016-6

- Dicyclopentadiene : 201-052-9

- Methylcyclohexane : 203-624-3

- Octane : 203-892-1
- Pentane : 203-692-4
- Toluene : 203-625-9
- Indene : 202-393-6
- Butane : 203-448-7
- Cumene : 202-704-5
- Cyclopentene : 205-532-9
- cis,trans-Hexa-1,4-diene : 209-756-8
- Benzene : 200-753-7
- Ethylbenzene : 202-849-4
- Styrene : 202-851-5

Japan - ISHL Ordinance Hazardous Substances Whose Names Are to be Indicated on the Label

Japan Law Concerning the Examination and Regulations of Manufacture, etc. of Chemical Substances

- Inventory - Japan - Existing and New Chemical Substances (ENCS)

- Hexane : (2)-6
- 1-Pentene : (2)-19
- Methyl cyclopentane : (3)-4669
- p-Xylene : (3)-3, (3)-60
- Cyclized cis-1,4-polyisoprene : (6)-1120
- α-Methylstyrene : (3)-5, (3)-8
- Isoprene : (2)-20 (listed under Pentadiene)
- 2-Methylbut-1-ene : (2)-19
- Cyclopentadiene : (9)-2602
- Cyclopentane : (3)-4166
- Dicyclopentadiene : (4)-634
- Methylcyclohexane : (3)-2230
- Octane : (2)-8
- Pentane : (2)-5
- Toluene : (3)-2, (3)-60
- Indene : (4)-580

- Butane : (2)-4

- Cumene : (3)-22

- Cyclopentene : (3)-3439

- cis,trans-Hexa-1,4-diene : (6)-50

- Benzene : (3)-1

- Ethylbenzene : (3)-28, (3)-60

- Styrene : (3)-4

New Zealand Environmental Protection Authority, Inventory of Chemicals

- Inventory - New Zealand - Inventory of Chemicals (NZIoC)

- Hexane : HSNO Approval: HSR001166

- 1-Pentene : HSNO Approval: HSR006316

- Methyl cyclopentane : HSNO Approval: HSR006772

- p-Xylene : HSNO Approval: HSR001048

- Cyclized cis-1,4-polyisoprene : May be used as a component in a product covered by a group standard but it is not approved for use as a chemical in its own right

- α-Methylstyrene : HSNO Approval: HSR001181

- Isoprene : HSNO Approval: HSR001179

- 2-Methylbut-1-ene : May be used as a single component chemical under an appropriate group standard

- Cyclopentadiene : May be used as a single component chemical under an appropriate group standard

- Cyclopentane : HSNO Approval: HSR001117

- Dicyclopentadiene : HSNO Approval: HSR001123

- Methylcyclohexane : HSNO Approval: HSR001198

- Octane : HSNO Approval: HSR001415

- Pentane : HSNO Approval: HSR001212

- Toluene : HSNO Approval: HSR001227

- Indene : May be used as a single component chemical under an appropriate group standard

- Butane : HSNO Approval: HSR000989

- Cumene : HSNO Approval: HSR001184

- Cyclopentene : May be used as a single component chemical under an appropriate group standard

- Benzene : HSNO Approval: HSR001038

- Ethylbenzene : HSNO Approval: HSR001151

- Styrene : HSNO Approval: HSR001221

Turkey Regulation on Inventory and Control of Chemicals

- Not applicable

Taiwan Chemical Substance Inventory

- Inventory - Taiwan - Taiwan Chemical Substance Inventory (TCSI)
  - Hexane : Present
  - 1-Pentene : Present
  - Methyl cyclopentane : Present
  - p-Xylene : Present
  - Cyclized cis-1,4-polyisoprene : Present
  - α-Methylstyrene : Present
  - Isoprene : Present
  - 2-Methylbut-1-ene : Present
  - Cyclopentadiene : Present
  - 2,3-Dimethylpent-1-ene : Present
  - Cyclopentane : Present
  - Dicyclopentadiene : Present
  - Methylcyclohexane : Present
  - Octane : Present
  - Pentane : Present
  - Toluene : Present
  - Indene : Present
  - Butane : Present
  - Cumene : Present
  - Cyclopentene : Present
  - cis,trans-Hexa-1,4-diene : Present
  - Benzene : Present
  - Ethylbenzene : Present
  - Styrene : Present

U.S. Toxic Substances Control Act

Vietnam National Chemicals Inventory (NCI)

- Inventory - Vietnam - National Chemicals Inventory (NCI) (DRAFT)

- Hexane : Present 02015

- Methyl cyclopentane : Present 01243

- p-Xylene : Present 01750

- Cyclized cis-1,4-polyisoprene : Present 31976

- α-Methylstyrene : Present 01354

- Methylcyclohexane : Present 01913

- Octane : Present 02099

- Pentane : Present 01956

- Toluene : Present 01914

- Indene : Present 01170

- Butane : Present 01785

- Cumene : Present 01353

- Benzene : Present 00360

- Ethylbenzene : Present 01450

- Styrene : Present 01451

16. Other information

1) Reference

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

2) Issue date : 26-12-2022

3) Revision date

- Revised date count : 3-1

- Last revised date : 01-06-2026

4) Other

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

GHS/EN