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## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

- 1) Product identifier: PARASOL-102
- 2) Relevant identified uses of the substance or mixture and uses advised against:
  - Use in Cleaning and cleaning agents, solvents.
- 3) Manufacture/Supplier/Distributor information:
  - Manufacture information:
    - Company name: ISU CHEMICAL CO., LTD
    - Address: 8, Seokdang-gil, Onsan-eup, Ulju-gun, Ulsan, Korea
    - Emergency telephone number: Tel. +82 52 231 5587 Fax. +82 52 231 5699

## 2. HAZARD IDENTIFICATION

- 1) Hazard classification: Aspiration hazard Cat.1  
Flammable liquids Cat.4  
Acute toxicity (transdermal) Cat.5

- 2) Allocation label elements including precautionary statements

- Hazard pictograms:



- Signal word:


- Danger

- Hazard statements

- H227: Combustible liquid
- H304: May be fatal if swallowed and enters airways.
- H313: May be harmful in contact with skin

### Precautionary statements

- Prevention:
  - P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
  - P280: Wear protective gloves/protective clothing/eye protection/face protection.
- Response:
  - P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
  - P312: Call a POISON CENTER/ doctor/if you feel unwell.
  - P331: Do NOT induce vomiting.
  - P370+P378: In case of fire: Use suitable extinguishing media to extinguish.
- Storage
  - P403: Store in a well ventilated place.
  - P405: Store locked up.
- Disposal:

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· P501: Dispose of contents/container in accordance with the waste-related laws.

3) Other hazards:

- No data available

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	Common name	CAS No.	Concentration(wt%)
Alkanes, C10-14	—	93924-07-3	100

### 4. FIRST AID MEASURES

1) Following eye contact:

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

2) Following skin contact:

- Seek immediate medical assistance.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Wash skin with soap and water.

3) Following inhalation:

- Call 911 or emergency medical service.
- Administer oxygen if breathing is difficult.
- Give artificial respiration if victim is not breathing.
- Move victim to fresh air.
- Keep victim warm and quiet.

4) Following ingestion:

- Get medical aid immediately.


5) Advice to physician:

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

### 5. FIRE FIGHTING MEASURES

1) Suitable (and unsuitable) extinguishing media:

- Water spray/fog, regular foam (Suitable extinguishing media)
- Dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam

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- Direct water (Unsuitable extinguishing media)
- 2) Special hazards arising from the substance or mixture:
  - Containers may explode when heated.
  - Runoff may create fire or explosion hazard.
  - Vapor explosion hazard indoors, outdoors or in sewers.
  - Fire may produce irritating, corrosive and/or toxic gases.
- 3) Special protective equipment for firefighters:
  - Cautions ; Most of liquids are lighter than water.
  - Substance may be transported hot.
  - Move containers from fire area if you can do it without risk.
  - Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
  - Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
  - Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
  - Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.
  - Fire involving Tanks: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

## 6. ACCIDENTAL RELEASE MEASURES

- 1) Health considerations and protective equipment:
  - Eliminate all ignition sources.
  - Stop leak if you can do it without risk.
  - Please note that materials and conditions to be avoided.
  - All equipment used when handling the product must be grounded.
  - A vapor suppressing foam may be used to reduce vapors.
  - Do not touch or walk-through spilled material.
  - Consider initial evacuation at least 300 m in the direction of the wind.
- 2) Environmental precautions:
  - Prevent entry into waterways, sewers, basements or confined areas.
  - Runoff may cause pollution.
- 3) For cleaning up:
  - Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
  - Large Spill: Dike far ahead of liquid spill for later disposal.
  - Use clean non-sparking tools to collect absorbed material.

## 7. HANDLING AND STORAGE

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- 1) Precautions for safe handling:
  - All equipment used when handling the product must be grounded.
  - Control access outside the authorities.
  - Handling refer to engineering control/personal protection section.
  - Caution: Heat
  - Measure atmospheric oxygen concentration and ventilate the area during the operation since low-closed area can cause oxygen deficiency.
- 2) Conditions for safe storage (including any incompatibilities):
  - Please note that materials and conditions to be avoided.
  - Store in tanks and containers designed to contain flammable liquids and ensure that the storage area is not close to heat and ignition sources.
  - Avoid direct sunlight in well-ventilated conditions and store the drums on the side of the rack under the cover as much as possible.
  - Store other types of containers under cover and avoid direct sunlight under well-ventilated conditions.
  - Be careful not to pile up too much.
  -

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

- 1) Chemical exposure limits, Biological exposure standard:

Components	Occupational exposure limits (Domestic)	ACGIH	Biological limit values
Alkanes, C10-14	No data available	No data available	No data available

- 2) Appropriate engineering controls:
  - Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
- 1) Personal protection equipment:
  - Respiratory protection:
    - Wear respiratory protective equipment certified by Korea Occupational Safety & Health Agency according to the physical and chemical properties of the gas / liquid exposed.
    - For gas / liquid substances the following respiratory protection is recommended: Isolated full face gas mask (for organic compounds (if acid gas, acid gas)) or Isolation type half-gas mask (for organic compound (for acid gas, acid gas)) or Direct type full face gas mask (for organic compounds (for acid gas, for acid gas)) or The half-gas mask (for organic compounds (for acid gas, for acid gas)) or Electric Gas Mask
    - In case of lack of oxygen (<19.5%), wear breathing mask or self-contained breathing apparatus.

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- Eye protection:
  - Wear safety goggles or breathability goggles to protect your eyes from vaporized organic materials that cause eye irritation or other health problems.
  - Install emergency washing facilities (shower type) and washing facilities in a location that is easy for workers to access.
- Hand protection:
  - Wear protective gloves of appropriate materials considering the physical and chemical characteristics of chemicals.
- Body protection:
  - Wear protective clothing of appropriate materials considering the physical and chemical characteristics of chemicals.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

- 1) Appearance(Physical state, color, etc): Clear colorless liquid at 20°C and 1 atm
- 2) Oder: No data available
- 3) Oder threshold: No data available
- 4) pH: No data available
- 5) Melting point/freezing point: -23 °C @ 1 atm
- 6) Initial boiling point and boiling range: 188 – 218 °C
- 7) Flash point: 64 °C
- 8) Evaporation rate: No data available
- 9) Flammability(solid, gas): Not applicable
- 10) Upper/lower flammability or explosive limits: No data available
- 11) Vapour pressure: 135 Pa @ 20°C (Read across: Decane)
- 12) Solubility(ies):  $2.82 \times 10^{-4}$  mg/L (In Water, Read across: Tetradecane)
- 13) Vapour density: No data available
- 14) Relative density: 0.7460 g/cm<sup>3</sup> @ 15°C
- 15) n-octanol/water partition coefficient: 7.2 (Read across: Tetradecane)
- 16) Auto ignition temperature: 205°C
- 17) Decomposition temperature: No data available
- 18) Viscosity: 1.16 mm<sup>2</sup>/s @ 20°C (Read across: Decane)
- 19) Molecular weight(mass): 155 – 165

## 10. STABILITY AND REACTIVITY

- 1) Stability and hazardous reactivity:
  - Containers may explode when heated.
  - Runoff may create fire or explosion hazard.
  - Vapor explosion hazard indoors, outdoors or in sewers.
  - Fire may produce irritating, corrosive and/or toxic gases.


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- Steam may form an explosive mixture with air.
- Stimulating skin and eyes or causing burns during inhalation and contact.
- 2) Conditions to avoid:
  - Ignition source(heat, spark, flame)
- 3) Incompatible materials:
  - Combustibles
  - Irritating, toxic gas
- 4) Hazardous decomposition products:
  - No data available

## 11. TOXICOLOGICAL INFORMATION

- 1) Exposure route information
  - ☐ No data available
- 2) Health hazard information
  - ☐ Acute toxicity:
    - Oral: LD50> 5,000 mg/kg (Rat, OECD TG 401, GLP, Read across: Hydrocarbons, C9-C11, cyclics, < 2% aromatics)
    - Dermal: LD50≥ 3,160 mg/kg (Rabbit, OECD TG 402, GLP, Read across: Hydrocarbons, C9-C11, isoalkanes, cyclics, < 2% aromatics)
    - Inhalation(Gas): No data available
    - Inhalation(Vapor): LC50> 1,369 ppm(Rat, 8h, Acute inhalation toxicity (LC50) of Decane is found to exceed 12.297 mg/L (4 hours) at conversion, and death from exposure is not observed and is not classified, OECD TG 403, Read across: Decane)
    - Inhalation(Dust, mist): No data available
  - ☐ Skin corrosion/Irritation:
    - No irritation of rabbit skin (Rabbit, OECD TG 404, GLP, Read across: Hydrocarbons, C9-C11, isoalkanes, cyclics, < 2% aromatics)
  - ☐ Serious eye damage/irritation:
    - No irritation of rabbit eye (Rabbit, OECD TG 405, GLP, Read across: Hydrocarbons, C9-C11, isoalkanes, cyclics, < 2% aromatics)
  - ☐ Respiratory sensitization:
    - No data available
  - ☐ Skin sensitization:
    - (Guinea pig, OECD TG 406, Read across)Hydrocarbons, C10 - C12, isoalkanes, < 2% aromatics group does not cause skin sensitization
  - ☐ Carcinogenicity:
    - No carcinogenicity
  - ☐ Germ cell mutagenicity:
    - Invitro - negative (S. typhimurium, Bacterial reverse mutation assignment, OECD TG 471, GLP, with or without metabolic activators, Read across: Hydrocarbons, C10-C12, ISO alkanes, <2% aromatics)
    - Negative (Human lymphocytes, Mammalian chromosome ablation test, OECD TG 473,


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<p>GLP, with or without metabolic activators, Read across: Hydrocarbons, C11-C14, n-alkanes, isoalkanes, cyclics, &lt;2% arithmetic)</p> <p>- Invivo - negative (Mouse, Mammalian cell study: DNA damage and/or repair, Read across: Decane)</p> <p>○ Reproductive toxicity:</p> <p>- Oral administration to male/female rats at 0, 25, 150 or 1,000 mg/kg showed no Evidence of developmental toxicity or minimality and no statistically significant exposure-related effects on reproductive parameters evaluated in this study; NOAEL (P0) 1,000 1,000 mg/kg (Rat, OECD TG 422, GLP, Read across: Decane)</p> <p>- As a result of performing the minimum formation test on offspring after inhalation and exposure to rats, no minimum formation due to exposure to 5,220 mg/m<sup>3</sup> was observed. NOAEC ≥ 5,220 mg/m<sup>3</sup> (900 ppm) (Rat, OECD TG 414, Read across: Hydrocarbons, C9-C11, isoalkanes, cyclics, &lt; 2% aromatics)</p> <p>○ Specific target organ toxicity (single exposure):</p> <p>- Oral exposure to rats at 5,000 mg/kg resulted in no deaths and no negative effects from exposure (Rat, Read across: Hydrocarbons, C9-C11, cyclics, &lt;2% aromatics)</p> <p>- Transdermal exposure to rabbit at 16 mL/kg resulted in no death, and edema from exposure was observed but recovered within 14 days (Rabbit, Read across: Hydrocarbons, C9-C11, isoalkanes, cyclics, &lt;2% aromatics)</p> <p>○ Specific target organ toxicity (repeated exposure):</p> <p>- As a result of performing a 90-day repeated inhalation administration test on rats, no negative effect due to exposure up to 900 ppm ( 5, 5,220 mg/m<sup>3</sup> ) was observed. NOAEC &gt; 900 ppm (Rat, OECD TG 413, Read across: Hydrocarbons, C10-C12, isoalkanes, &lt; 2% aromatics)</p> <p>○ Aspiration hazard: (Cat. 1)</p> <p>- Kinematic viscosity: about 1.16 mm<sup>2</sup>/s @ 20℃</p>
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## 12. ECOLOGICAL INFORMATION

<p>1) Aquatic toxicity:</p> <p>- Fish: LL50 &gt; 1,000 mg/L (Oncorhynchus mykiss, 96h, OECD TG 203, GLP, Read across: Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, &lt;2% aromatics)-</p> <p>- Crustacean: EL50 = 100 mg/L (Daphnia magna, 48h, not classified because no death from exposure to the limit of acceptance is observed; Read across: Nonane)</p> <p>- Aquatic algae: EL50 &gt; 1,000 mg/L (Pseudokirchneriella subcapitata, 72h, OECD TG 201, GLP, Read across: Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, &lt;2% aromatics)</p> <p>2) Persistence and degradation:</p> <p>- Log Pow= 7.2 (Read across: Tetradecane)</p> <p>- The degree of decomposition was 31.3% (28 days, non-adaptation test), 40.5% (41 days, non-adaptation test), 41.7% (28 days, adaptation test), 47.5% (41 days, adaptation test), which was found to be non-decomposable (OECD TG 301F, Read across: Hydrocarbons, C10-C12, isoalkanes, &lt;2% arithmetic)</p> <p>3) Bioaccumulative potential: BCF = 39.66 (estimated)</p>
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4) Soil mobility: Koc = 22,270 (estimated)

### 13. DISPOSAL CONSIDERATIONS

1) Disposal methods:

- Dispose of oil and water separable in advance by using oil and water separation method.
- Dispose of liquid organic solvents as waste organic solvents in any of the following ways.
- Incineration
- After disposing by evaporating and concentrating method, incinerate the residue.
- After purifying by separating, distilling, extracting and filtering, incinerate the residue.
- Dispose of residues generated after disposal using neutralization, oxidation, reduction, polymerization, and condensation reactions, or dispose of them again by coagulation, precipitation, filtration, and dehydration, and incinerate the residues.

2) Precautions (including disposal of contaminated container of package):

- Regulations precautions indicated in Waste Management Act should be considered.

### 14. TRANSPORT INFORMATION

1) UN No.: 3295

2) Proper shipping name: HYDROCARBONS, LIQUID, N.O.S, (Alkanes, (C=10-14))

3) Class or division: 3

4) Packing group: Not applicable

5) Marine pollutant: Not applicable

6) Special safety response for transportation or transportation measure:

Emergency measures in case of fire : F-E

Emergency measures in case of Outflow : S-D

### 15. REGULATORY INFORMATION

1) Occupational Safety and Health Act in Korea: Not applicable

2) Chemicals Control Act in Korea: Not applicable

3) Safety Control of Dangerous Substances Act in Korea: Class 4 Second Petroleum liquids

4) Wastes Control Act in Korea: Not applicable

5) Other regulations in KOREA and Abroad regulations:


• Other regulation (Domestic):

- Persistent Organic Pollutants (POPs) Control Act: Not applicable

• National regulations:

- U.S.A. management information(OSHA regulation): Not applicable
- U.S.A. management information(CERCLA regulation): Not applicable
- U.S.A. management information(EPCRA 302 regulation): Not applicable
- U.S.A. management information(EPCRA 304 regulation): Not applicable



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- U.S.A. management information(EPCRA 313 regulation): Not applicable
- U.S.A. management information(Rotterdam Convention on Substances): Not applicable
- U.S.A. management information(Stockholm Convention on Substances): Not applicable
- U.S.A. management information(Montreal Protocol on Substances): Not applicable
- EU Classification (Classification): Xn - harmful
- EU Classification (Risk Phrases):
  - R65 - Harmful: may cause lung damage if swallowed
- EU Classification (Safety Phrases):
  - S62 - if swallowed, do not induce vomiting: seek medical advice immediately and show this container or label

## 16. OTHER INFORMATION

### 1) Reference:

- Korea Occupational Safety & Health Agency MSDS
- OECD SIDS
- HSDB
- IARC
- ECOTOX
- NITE
- Recommendations on the transport of dangerous goods
- NCIS
- Emergency response guide book
- Korea Dangerous Material Inventory Management System, NEMA
- ECOSAR
- QSAR
- EU RAR
- The Chemical Database
- ICSC
- RTECS
- NIOSH Pocket guide
- ESIS
- ECHA CHEM
- HPVIS
- SIDS
- IUCLID

2) Date of initial completion: 1996. 07. 21

3) Number of revised/Date of last revision: 10 / 2022. 02. 08

4) Other: No data available