	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	1/10

\* MSDS Registration No. : AA01312-0000000029

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

- 1) Product identifier: PARASOL-123
- 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:

	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	2/10

\* MSDS Registration No. : AA01312-0000000029

· 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

\* EU REACH Registration Number: 01-2119475608-26-0003

### 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.
- Do not induce vomit
- 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.
- If swallowed, seek medical advice immediately.
- Do not vomit.

5) Advice to physician:

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

	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	3/10


\* MSDS Registration No. : AA01312-0000000029

## 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
  - Direct water (Unsuitable extinguishing media)
- 2) Special hazards arising from the substance or mixture:
  - Containers may explode when heated.
  - Highly flammable: easily ignited by heat, sparks or flame
  - Runoff may create fire or explosion hazard.
  - Vapor explosion hazard indoors, outdoors or in sewers.
  - Vapors may form explosive mixtures with air
  - Vapors may cause dizziness or asphyxiation without consciousness
  - Fire may produce irritating, corrosive and/or toxic gases.
  - Inhalation and contact may cause skin and eye irritation or burns
- 3) Special protective equipment for firefighters:
  - Cautions ; Most of liquids are lighter than water.
  - Keep fire away from fire area to extinguish fire.
  - Most vapors are heavier than air and can spread along the ground and accumulate in lowlands or confined spaces.
  - 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.
  - Wipe up spills immediately and follow the protective precautions.
  - 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.

	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	4/10

\* MSDS Registration No. : AA01312-0000000029

- Do not touch or walk through spilled material.
- 2) Environmental precautions:
  - Prevent entry into waterways, sewers, basements or confined areas.
  - Runoff may cause pollution.
- 3) For cleaning up:
  - Cover with absorbent dry sand / dirt or other non-combustible material and transfer to chemical waste container.
  - Absorb liquid and wash contaminated area with detergent and water
  - Large Spill: Dike far ahead of liquid spill for later disposal.
  - Use clean non-sparking tools to collect absorbed material.


## 7. HANDLING AND STORAGE

- 1) Precautions for safe handling:
  - All equipment used when handling the product must be grounded.
  - Follow all MSDS / label precautions as product residue may remain after the container is emptied.
  - Handling refer to engineering control/personal protection section.
  - Open the cap carefully before opening.
  - Do not breathe vapors from heated materials.
  - Do not enter storage area without proper ventilation.
  - Note the materials and conditions to avoid.
  - Cuation: 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
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	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	5/10

\* MSDS Registration No. : AA01312-0000000029

Alkanes, C10-14	No data available	No data available	No data available
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2) Appropriate engineering controls:

- Use process containment, local exhaust or other engineering controls to control air levels below exposure limits.

3) 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.

○ Eye protection:

- Wear safety goggles or breathable goggles to protect eyes from vaporous organic substances that cause eye irritation or other health hazards.
- Install an emergency washing facility (shower type) and a cleansing facility in a location easily accessible to workers.

○ Hand protection:


- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

○ Body protection:

- Wear appropriate protective gloves by considering physical and chemical properties 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: -6 °C @ 1 atm
- 6) Initial boiling point and boiling range: 218-233 °C
- 7) Flash point: 93 °C
- 8) Evaporation rate: No data available
- 9) Flammability(solid, gas): Not applicable

	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	6/10

\* MSDS Registration No. : AA01312-0000000029


- 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: 0.7580 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): 175-185

## 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.
  - Vapors may form explosive mixtures with air
  - Vapors may cause dizziness or asphyxiation without consciousness
  - Inhalation and contact may cause skin and eye irritation or burns
  - Fire may produce irritating, corrosive and/or toxic gases.
- 2) Conditions to avoid:
  - Ignition source(heat, spark, flame)
- 3) Incompatible materials:
  - Combustibles
  - Irritating, toxic gas
- 4) Hazardous decomposition products:
  - Irritating, corrosive and/or toxic gases

## 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

	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	7/10

**\* MSDS Registration No. : AA01312-0000000029**

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, GLP, with or without metabolic activators, Read across: Hydrocarbons, C11-C14, n-alkanes, isokanes, cyclics, <2% arithmetic)
  - Invivo - negative (Mouse, Mammalian cell study: DNA damage and/or repair, Read across: Decane)
- Reproductive toxicity:
  - 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)
  - 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, < 2% aromatics)
- Specific target organ toxicity (single exposure):
  - 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, <2% aromatics)
  - 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, <2% aromatics)
- Specific target organ toxicity (repeated exposure):
  - 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> 900 ppm (Rat, OECD TG 413, Read across: Hydrocarbons, C10-C12, isoalkanes, < 2% aromatics)

	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	8/10

\* MSDS Registration No. : AA01312-0000000029

- Aspiration hazard: (Cat. 1)
- Kinematic viscosity: about 1.16 mm<sup>2</sup>/s @ 20℃

## 12. ECOLOGICAL INFORMATION

- 1) Aquatic toxicity:
  - Fish: LL50> 1,000 mg/L (Oncorhynchus mykiss, 96h, OECD TG 203, GLP, Read across: Hydrocarbons, C9–C10, n-alkanes, isoalkanes, cyclics, <2% aromatics)–
  - 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)
  - Aquatic algae: EL50> 1,000 mg/L (Pseudokirchneriella subcapitata, 72h, OECD TG 201, GLP, Read across: Hydrocarbons, C9–C11, n-alkanes, isoalkanes, cyclics, <2% aromatics)
- 2) Persistence and degradation:
  - Log Pow= 7.2 (Read across: Tetradecane)
  - 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, <2% arithmetic)
- 3) Bioaccumulative potential: BCF = 39.66 (estimated)
- 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



	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	9/10

\* MSDS Registration No. : AA01312-0000000029


- 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 Third 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
    - 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

	Material Safety Data Sheet (MSDS)	Rev.No		10	
	PARASOL-123	DATE	2022.02.08	PAGE	10/10

\* MSDS Registration No. : AA01312-0000000029

- 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

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4) Other: No data available