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

- 1) Product identifier: PARASOL-134
- 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

* 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.
- Get medical aid immediately.

4) Following ingestion:

- Get medical aid immediately.
- If swallowed, seek medical advice immediately.

5) Advice to physician:

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

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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.

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- 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.
 - 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 a locked place.

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 process containment, local exhaust or other engineering controls to control air levels below exposure limits.
- 3) Personal protection equipment:


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- 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: 7 °C @ 1 atm
- 6) Initial boiling point and boiling range: 242-250 °C
- 7) Flash point: 110 °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): 2.82×10^{-4} mg/L (In Water, Read across: Tetradecane)
- 13) Vapour density: No data available
- 14) Relative density: 0.7664 @ 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

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18) Viscosity: 1.16 mm²/s @ 20℃ (Read across: Decane)

19) Molecular weight(mass): 198

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 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)

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- ☐ 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/m³ was observed. NOAEC≥ 5,220 mg/m³ (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/㎥) was observed. NOAEC> 900 ppm (Rat, OECD TG 413, Read across: Hydrocarbons, C10–C12, isoalkanes, < 2% aromatics)
- ☐ Aspiration hazard: (Cat. 1)
 - Kinematic viscosity: about 1.16 mm²/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)–

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- 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 or 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
- 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


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- 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
 - 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

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<ul style="list-style-type: none"> • RTECS • NIOSH Pocket guide • ESIS • ECHA CHEM • HPVIS • IUCLID • SIDS <p>2) Date of initial completion: 1996. 07. 21</p> <p>3) Number of revised/Date of last revision: 10 / 2022. 02. 08</p> <p>4) Other: No data available</p>
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