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

- 1) Product identifier: PARASOL-124M
- 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.
- 4) Following ingestion:
 - Do not induce vomit
 - 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

5. FIRE FIGHTING MEASURES

- 1) Suitable (and unsuitable) extinguishing media:

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- Use alcohol foam, carbon dioxide or water spray for extinguishing involving this material.
- Dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam

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.
- Do not touch or walk through spilled material.

2) Environmental precautions:

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

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- Runoff may cause pollution.
- 3) For cleaning up:
 - Absorb spills with inert material (e.g. dry sand or soil) and place in 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 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:
- Respiratory protection:
 - Wear respiratory protective equipment certified by Korea Occupational Safety & Health

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<p>Agency according to the physical and chemical properties of the gas / liquid exposed.</p> <ul style="list-style-type: none"> - For gas / liquid substances the following respiratory protection is recommended: <ul style="list-style-type: none"> · Isolated full face gas mask (for organic compounds (if acid gas, acid gas) · Isolation type half-gas mask (for organic compound (for acid gas, acid gas) · Direct type full face gas mask (for organic compounds (for acid gas, for acid gas) · The half- gas mask (for organic compounds (for acid gas, for acid gas) · Electric Gas Mask - In case of lack of oxygen (<19.5%), wear breathing mask or self-contained breathing apparatus. <p>○ Eye protection:</p> <ul style="list-style-type: none"> - 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. <p>○ Hand protection: Wear appropriate protective gloves by considering physical and chemical properties of chemicals.</p> <p>○ Body protection: Wear appropriate protective gloves by considering physical and chemical properties of chemicals.</p>

9. PHYSICAL AND CHEMICAL PROPERTIES

<p>1) Appearance(Physical state, color, etc): Clear colorless liquid at 20°C and 1 atm</p> <p>2) Oder: No data available</p> <p>3) Oder threshold: No data available</p> <p>4) pH: No data available</p> <p>5) Melting point/freezing point: -4 °C @ 1 atm</p> <p>6) Initial boiling point and boiling range: 221-250 °C</p> <p>7) Flash point: 95 °C</p> <p>8) Evaporation rate: No data available</p> <p>9) Flammability(solid, gas): Not applicable</p> <p>10) Upper/lower flammability or explosive limits: No data available</p> <p>11) Vapour pressure: 135 Pa @ 20°C (Read across: Decane)</p> <p>12) Solubility(ies): 2.82×10^{-4} mg/L (In Water, Read across: Tetradecane)</p> <p>13) Vapour density: No data available</p> <p>14) Relative density: 0.7600~0.7620 g/cm³ @ 15°C</p> <p>15) n-octanol/water partition coefficient: 7.2 (Read across: Tetradecane)</p> <p>16) Auto ignition temperature: 205°C</p> <p>17) Decomposition temperature: No data available</p> <p>18) Viscosity: 1.7~1.8 cSt at 40°C</p> <p>19) Molecular weight(mass): 186</p>
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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:
 - irritant, corrosive, toxic gas

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)

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<p>, C9-C11, isoalkanes, cyclics, < 2% aromatics)</p> <ul style="list-style-type: none"> ○ Respiratory sensitization: <ul style="list-style-type: none"> - No data available ○ Skin sensitization: <ul style="list-style-type: none"> - (Guinea pig, OECD TG 406, Read across)Hydrocarbons, C10 - C12, isoalkanes, < 2% aromatics group does not cause skin sensitization ○ Carcinogenicity: <ul style="list-style-type: none"> - No carcinogenicity ○ Germ cell mutagenicity: <ul style="list-style-type: none"> - 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: <ul style="list-style-type: none"> - 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): <ul style="list-style-type: none"> - 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): <ul style="list-style-type: none"> - 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/ m³) was observed. NOAEC> 900 ppm (Rat, OECD TG 413, Read across: Hydrocarbons, C10-C12, isoalkanes, < 2% aromatics) ○ Aspiration hazard: (Cat. 1) <ul style="list-style-type: none"> - Kinematic viscosity: about 1.16 mm²/s @ 20℃
12. ECOLOGICAL INFORMATION
<p>1) Aquatic toxicity:</p> <ul style="list-style-type: none"> - Fish: LL50> 1,000 mg/L (Oncorhynchus mykiss, 96h, OECD TG 203, GLP, Read across:

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<p>Hydrocarbons, C9-C10, n-alkanes, isoalkanes, cyclics, <2% aromatics)-</p> <ul style="list-style-type: none"> - 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) <p>2) Persistence and degradation:</p> <ul style="list-style-type: none"> - 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) <p>3) Bioaccumulative potential: BCF = 39.66 (estimated)</p> <p>4) Soil mobility: Koc = 22,270 (estimated)</p>

13. DISPOSAL CONSIDERATIONS


<p>1) Disposal methods:</p> <ul style="list-style-type: none"> - 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. <p>2) Precautions (including disposal of contaminated container or package):</p> <ul style="list-style-type: none"> - Regulations precautions indicated in Waste Management Act should be considered.
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14. TRANSPORT INFORMATION

<p>1) UN No.: 3295</p> <p>2) Proper shipping name: HYDROCARBONS, LIQUID, N.O.S</p> <p>3) Class or division: 3</p> <p>4) Packing group: Not applicable</p> <p>5) Marine pollutant: Not applicable</p> <p>6) Special safety response for transportation or transportation measure:</p> <p>Emergency measures in case of fire : : F-E</p> <p>Emergency measures in case of Outflow : S-D</p>

15. REGULATORY INFORMATION


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- 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
 - 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

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<ul style="list-style-type: none"> • ICSC • 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: 11 / 2022. 02. 08</p> <p>4) Other: No data available</p>
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