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

- 1) Product identifier: Normal Paraffin C10~C13, n-alkanes, <2% aromatics
- 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.
- 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, consult a medical institution (doctor) 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

### 5. FIRE FIGHTING MEASURES


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- 1) Suitable (and unsuitable) extinguishing media:
  - Direct water (Unsuitable extinguishing media)
  - Alcohol foam, carbon dioxide or water spray should be used to digest this substance.
  - 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 and flames.
  - Leakage is at risk of fire/explosion
  - Vapor explosion hazard indoors, outdoors or in sewers.
  - Fire may produce irritating, corrosive and/or toxic gases.
  - Steam may form an explosive mixture with air.
  - Steam may cause dizziness or suffocation without awareness.
  - Stimulating skin and eyes or causing burns during inhalation and contact.
- 3) Special protective equipment for firefighters:
  - Cautions ; Most of liquids are lighter than water.
  - Substance may be transported hot.
  - Most of the steam is heavier than air, so it can spread along the ground and accumulate in low-lying areas or confined spaces
  - Keep safe distance from the area and digest.
  - 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 any spilled product immediately and follow the precautions in the protective gear section.
  - 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.

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- 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:
  - Large Spill: Dike far ahead of liquid spill for later disposal.
  - Absorb spillage with inert materials (e.g., dry sand or soil) and place it in a chemical waste container.
  - Absorb liquid and rinse contaminated area with detergent and water.
  - 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.
  - 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 process isolation and local exhaust or conduct other engineering management to control the air level.

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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 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: -22 °C @ 1 atm
- 6) Initial boiling point and boiling range: 193-210 °C
- 7) Flash point: 72 °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: 0.7345 g/cm<sup>3</sup> @ 15°C
- 15) n-octanol/water partition coefficient: 7.2 (Read across: Tetradecane)
- 16) Auto ignition temperature: 205°C

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- 17) Decomposition temperature: No data available  
 18) Viscosity: 1.16 mm<sup>2</sup>/s @ 20℃ (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.
  - 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:
- 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, 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/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/㎥ ) 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 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)-

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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: Designated waste
- 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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- RTECS
- NIOSH Pocket guide
- ESIS
- ECHA CHEM
- HPVIS
- IUCLID
- SIDS

2) Date of initial completion: 2019. 01. 29

3) Number of revised/Date of last revision: 1 / 2022. 02. 08

4) Other: No data available