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

- 1) Product identifier: N-Par 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, (C=13-14)	–	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.

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.
 - Vapors may form explosive mixtures with air
 - Vapors may cause dizziness or asphyxiation without consciousness
 - 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.
- 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.

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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.
- 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 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, (C=13-14)	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.

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

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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: 7 °C
- 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: 0.7664 @ 15°C
- 14) Relative density: 0.7550~0.7650 @ 20°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 mm²/s @ 20°C (Read across: Decane)
- 19) Molecular weight(mass): 198

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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.
 - 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, 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:


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- 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, isoalkanes, 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)–
 - 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)

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- 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
- 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 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

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- 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
- RTECS
- NIOSH Pocket guide
- ESIS
- ECHA CHEM
- HPVIS
- IUCLID

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<ul style="list-style-type: none"> SIDS <p>2) Print date: 2019. 06. 07</p> <p>3) Number of revised/Date of last revision: 1 / 2022. 02. 24</p> <p>4) Other: Not applicable</p>
