



Safety Data Sheet

Section 1. Identification of the substance/mixture and of the company/undertaking

Product identifier:

Product name: n-Pentane

SDS No. : 5988E-3

Relevant identified uses of the substance or mixture and uses advised against

Research and Development

Details of the supplier of the safety data sheet

Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.

Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN

Division: Chemical Safety Management Department

Telephone number: +81-6-6946-8061

FAX: +81-6-6946-1607

Section 2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

PHYSICAL AND CHEMICAL HAZARDS

Flammable liquids: Category 2

HEALTH HAZARDS

Serious eye damage/eye irritation: Category 2

Specific target organ toxicity – single exposure: Category 3 (Respiratory tract irritation)

Specific target organ toxicity – single exposure: Category 3 (Narcotic effects)

Aspiration hazard: Category 1

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment, short-term (acute): Category 2

(Note) GHS classification without description: Not classified/Classification not possible

Label elements



Signal word: Danger

HAZARD STATEMENT

H225 Highly flammable liquid and vapor

H319 Causes serious eye irritation

H335 May cause respiratory irritation

H336 May cause drowsiness or dizziness

H304 May be fatal if swallowed and enters airways

H401 Toxic to aquatic life

PRECAUTIONARY STATEMENT

Prevention

P273 Avoid release to the environment.

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 Keep container tightly closed.



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- P240 Ground and bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting equipment.
- P242 Use non-sparking tools.
- P243 Take action to prevent static discharges.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
- P271 Use only outdoors or in a well-ventilated area.
- P264 Wash contaminated parts thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response

- P370 + P378 In case of fire: Use appropriate media to extinguish.
- P312 Call a POISON CENTER/doctor/physician if you feel unwell.
- P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313 If eye irritation persists: Get medical advice/attention.
- P331 IF SWALLOWED: Do NOT induce vomiting.
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician.

Storage

- P403 Store in a well-ventilated place. P233 Keep container tightly closed. P235 Keep cool.
- P405 Store locked up.

Disposal

- P501 Dispose of contents/container in accordance with local/national regulation.

Specific adverse human health effects

See "11. Toxicological Information".

Section 3. Composition/information on ingredients

Mixture/Substance selection:

Substance

Ingredient name	Content (%)	CAS No.	Chemicals No, Japan	Chemical formula
n-Pentane	99(min)	109-66-0	2-5	CH ₃ (CH ₂) ₃ CH ₃

Note : The figures shown above are not the specifications of the product.

Impurities

2-Methylbutane ≤1.0% (CAS No.78-78-4)

Section 4. First-aid measures**Descriptions of first-aid measures****General measures**

Call a POISON CENTER/doctor/physician if you feel unwell.

IF INHALED

Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER/doctor/physician if you feel unwell.

IF ON SKIN

Take off immediately all contaminated clothing. Rinse skin with water or shower.



If skin irritation or rash occurs: Get medical advice/attention.

IF IN EYES

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

IF SWALLOWED

Rinse mouth.

Do NOT induce vomiting.

Immediately call a POISON CENTER/doctor/physician.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use dry powder to extinguish.

Unsuitable extinguishing media

Indoor firefighting equipment or outdoor firefighting equipment

Sprinkler equipment

Dry-powder firefighting equipment – other (except for phosphate etc.,hydrogen carbonate etc.)

Straight stream water extinguisher

Water mist extinguisher

Reinforcing liquid jet extinguisher

Dry-powder extinguisher – other (except for phosphate etc.,hydrogen carbonate etc.)

Bucket of water or tank of water

Specific hazards arising from the substance or mixture

Fire may produce irritating, corrosive and/or toxic gases.

Runoff from fire control or dilution water may cause pollution.

See "10.Stability and Reactivity".

Advice for firefighters

Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame retardant clothing.

Wear protective gloves/protective clothing/eye protection/face protection.

Firefighters should wear self-contained breathing apparatus with a full facepiece operated in the positive pressure mode.

Section 6. Accidental release measures

Personnel precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.

Ventilate area until material pick up is complete.

Wear proper protective equipment.

Environmental precautions

Prevent spills from entering sewers, watercourses, low areas or rivers. To be careful not discharged to the environment without being properly handled waste water contaminated.

Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.



Preventive measures for secondary accident

Collect spillage.

Section 7. Handling and storage

Precautions for safe handling

Preventive measures

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Ground and bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment.

Use non-sparking tools.

Take action to prevent static discharges.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

Safety Measures

Use only outdoors or in a well-ventilated area.

Recommend to use protective equipment in conformity with the standards.

Wear protective gloves/protective clothing/eye protection/face protection.

Wash hands et al thoroughly after handling.

When using do not eat, drink or smoke.

Any incompatibilities

See "10.Stability and Reactivity".

Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.

Storage

Conditions for safe storage

Keep container tightly closed.

Store locked up. (P405)

Store in a cool, dry place. Do not store in direct sunlight.

Storage in accordance with local/national regulation.

Container and packaging materials for safe handling

Glass

Polyethylene

etc.

Section 8. Exposure controls/personal protection

Control parameters

Adopted value

(n-Pentane)

ACGIH(2014) TWA: 1000ppm (Narcosis; resp tract irr)

(2-Methylbutane)

ACGIH(2014) TWA: 1000ppm (Narcosis; resp tract irr)

**Exposure controls****Appropriate engineering controls**

- Do not use in areas without adequate ventilation.
- Eye wash station should be available.
- Washing facilities should be available.

Individual protection measures**Respiratory protection**

- Wear respiratory protection (dust-proof mask/gas mask). Select chemical cartridge corresponding to type of gases when using a gas mask.

Hand protection

- Wear impervious protective glove.

Eye protection

- Wear eye/face protection. Wear safety goggles in cases gas is generated.

Skin and body protection

- Wear protective clothing.

Section 9. Physical and Chemical Properties**Information on basic physical and chemical properties**

Physical state: Liquid

Color: Colorless, clear

Odor: Characteristic odour

Melting point/Freezing point: -129°C

Boiling point or initial boiling point: (n-Pentane)36°C

Boiling range data is not available.

Flammability (gases, liquids and solids) data is not available.

Lower and upper explosion limit/flammability limit:

Lower explosion limit: 1.5 vol %

Upper explosion limit: 7.8 vol %

Flash point: (n-Pentane)-49°C

Auto-ignition temperature: (n-Pentane)260°C

Decomposition temperature data is not available.

pH data is not available.

Kinematic viscosity: 0.36 mm²/s

Solubility:

Solubility in water: Very poor (0.004 g/100 ml, 20°C)

Solubility in solvent data is not available.

n-Octanol/water partition coefficient: log Pow3.39

Vapor pressure: 53.3 kPa (18.5°C)

Density and/or relative density: 0.63

Relative vapor density (Air=1): 2.5

Relative density of the Vapor/air - mixture at 20°C (Air = 1): 1.8

Particle characteristics data is not available.

Other information

Other information is not available.

Section 10. Stability and Reactivity**Reactivity**

Not available.

**Chemical stability**

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

(n-Pentane)

The vapour is heavier than air and may travel along the ground; distant ignition possible.

The vapour is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen.

May explode on heating. Reacts with strong oxidants such as peroxides, nitrates and perchlorates. This generates fire and explosion hazard. Attacks some forms of plastic, rubber and coatings. (ICSC 0534)

Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

Incompatible materials

Strong oxidizing agents

Hazardous decomposition products

Carbon oxides

Section 11. Toxicological Information**Information on toxicological effects**

Acute toxicity data is not available.

Irritant properties

Skin corrosion/irritation data is not available.

Serious eye damage/irritation

[Product]

Category 2, Causes serious eye irritation

[Data for components of the product]

[GHS Cat. Japan, base data]

(n-Pentane)

rabbit mild irritation (SIDS, 2010; EU-RAR, 2003)

(2-Methylbutane)

eyes irritation (HSDB, 2014)

Allergenic and sensitizing effects data is not available.

Mutagenic effects data is not available.

Carcinogenic effects data is not available.

Reproductive toxicity data is not available.

Specific target organ toxicity (STOT)

STOT-single exposure

[Product]

Category 3, May cause respiratory irritation

Category 3, May cause drowsiness or dizziness

[Data for components of the product]

[cat.3 (respiratory tract irritation)]

[GHS Cat. Japan, base data]

(n-Pentane)

respiratory tract irritation (EU-RAR, 2003)

(2-Methylbutane)

respiratory tract irritation (HSDB, 2014)

[cat.3 (narcotic effects)]



[GHS Cat. Japan, base data]
(n-Pentane)
narcotic effect (ACGIH 7th, 2014)
(2-Methylbutane)
narcotic effect (HSDB, 2014)

STOT-repeated exposure data is not available.

Aspiration hazard

[Product]

Category 1, May be fatal if swallowed and enters airways

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

(n-Pentane)

cat. 1; hydrocarbon, kinematic viscosity=0.355 mm²/s (25/20°C, CERI cal.)

(2-Methylbutane)

cat. 1; kinematic viscosity=0.345 mm²/s (20°C, CERI cal.)

Section 12. Ecological Information

Toxicity

Aquatic toxicity

[Product]

Category 2, Toxic to aquatic life

[Data for components of the product]

Hazardous to the aquatic environment, short-term (acute)

[GHS Cat. Japan, base data]

(n-Pentane)

Crustacea (*Daphnia magna*) EC50=2.7mg/L/48hr (EU-RAR, 2003; SIDS, 2010)

(2-Methylbutane)

Crustacea (*Daphnia magna*) EC50=2.3mg/L/48hr (SIDS, 2010)

Hazardous to the aquatic environment, long-term (chronic)

[GHS Cat. Japan, base data]

(n-Pentane)

Algae (*Pseudokirchneriella subcapitata*) NOEC (r)=2mg/L/72hr (RU-RAR, 2003; SIDS, 2010)

Water solubility

(n-Pentane)

very poor (0.004 g/100 ml, 20°C) (ICSC, 2014)

(2-Methylbutane)

none (ICSC, 2014)

Persistence and degradability

[Data for components of the product]

(n-Pentane)

Rapidly degradable (BOD_Degradation : 96% (METI existing chemical safety inspections, 1997))

(2-Methylbutane)

Rapidly degradable (OECD TG301F_Degradation : 71.4%/28 days (SIDS, 2010))

Bioaccumulative potential

[Data for components of the product]

(n-Pentane)

log Pow=3.39 (PHYSPROP DB, 2005; EU-RAR, 2003)



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(2-Methylbutane)

log Pow=2.72 (PHYSPROP DB, 2009)

Mobility in soil

Mobility in soil data is not available.

Other adverse effects

Ozone depleting chemical data is not available.

Section 13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging

Waste treatment methods

Avoid release to the environment.

Dispose of contents/container as industrial waste. Accordance with local/national regulation.

Section 14. Transport Information

UN Number or ID Number : 1265

UN Proper Shipping Name :

PENTANES, liquid

Class or division (Transport hazard class) : 3

Packing group : II

ERG GUIDE No.: 128

IMDG Code (International Maritime Dangerous Goods Regulations)

UN Number or ID Number : 1265

UN Proper Shipping Name :

PENTANES, liquid

Class or division (Transport hazard class) : 3

Packing group : II

IATA (Dangerous Goods Regulations)

UN Number or ID Number : 1265

UN Proper Shipping Name :

PENTANES, liquid

Class or division (Transport hazard class) : 3

Hazard labels : Flamm.liquid

Packing group : II

Environmental hazards

Marine pollutants (yes/no) : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Noxious Liquid Substances ; Cat. Y

n-Pentane; 2-Methylbutane

Flammable Liquid

n-Pentane

Section 15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Toxic Substances Control Act (TSCA) Inventory

Chemicals listed in TSCA Inventory



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2-Methylbutane; n-Pentane

Other regulatory information

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

Section 16. Other information**References and sources for data**

Globally Harmonized System of classification and labelling of chemicals, UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 22nd edit., 2021 UN
IMDG Code, 2020 Edition (Incorporating Amendment 40-20)
IATA Dangerous Goods Regulations (64th Edition) 2023
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2022 TLVs and BEIs. (ACGIH)
Supplier's data/information

General Disclaimer

This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety.

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.

The GHS classification data given here is based on current Japan official data (NITE published in 2021).