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Safety Data Sheet

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

Product identifier:
Product name: 4-Methyl-2-pentanone
SDS No. : 4897E-4
Recommended use of the chemical and restrictions on use
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

Classification of the substance or mixture
PHYSICAL AND CHEMICAL HAZARDS
Flammable liquids: Category 2
HEALTH HAZARDS
Acute toxicity (Inhalation): Category 3
Serious eye damage/eye irritation: Category 2
Carcinogenicity: Category 1B
Specific target organ toxicity - single exposure: Category 3 (Respiratory tract irritation)
Specific target organ toxicity - single exposure: Category 3 (Narcotic effects)
Specific target organ toxicity - repeated exposure: Category 1 (central nervous system)
(Note) GHS classification without description: Not classified/Classification not possible
Label elements
Hazard pictograms:

Signal word: Danger
Hazard statements
H225 Highly flammable liquid and vapor
H331 Toxic if inhaled
H319 Causes serious eye irritation
H350 May cause cancer
H335 May cause respiratory irritation
H336 May cause drowsiness or dizziness
H372 Causes damage to organs through prolonged or repeated exposure (central nervous system)
Precautionary statements
Prevention
P203 Obtain, read and follow all safety instructions before use.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 Keep container tightly closed.
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.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P271 Use only outdoors or in a well-ventilated area.
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P264 + P265 Wash hands thoroughly after handling. Do not touch eyes.
P270 Do not eat, drink or smoke when using this product.

Response

P370 + P378 In case of fire: Use appropriate media to extinguish.
P316 Get emergency medical help immediately.
P318 IF exposed or concerned, get medical advice.
P319 Get medical help 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 affected areas 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 + P317 If eye irritation persists: Get medical help.

Storage

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

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Specific danger/hazard

Health hazard

See "11. Toxicological Information".

Section 3. Composition/information on ingredients

Substance/mixture:

Substance

Ingredient name	Content (%)	CAS RN	ENCS	Chemical formula
4-Methyl-2-pentanone	≧99	108-10-1	2-542	(CH3)2CHCH2COCH3

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

Impurities

Benzene ≦0.0020% (CAS RN 71-43-2)

Section 4. First aid measures

Descriptions of first aid measures

General measures

IF exposed or concerned, get medical advice.

IF INHALED

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Get emergency medical help immediately.
Get medical help if you feel unwell.

IF ON SKIN

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water or shower.
If skin irritation or rash occurs: Get medical help.

IF IN EYES

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 help.

IF SWALLOWED

Rinse mouth.
IF SWALLOWED: Get medical help if you feel unwell.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.
In case of fire, use spraying loaded liquid, foam (water-soluble liquid: alcohol-resistant foam), inactive gases, dry powder, dry sand to extinguish.
*Fire Service Act Group 4 Hazardous Materials

Unsuitable extinguishing media

Indoor Fire Plug System or Outdoor Fire Plug System
Sprinkler System
Dry Chemical Extinguishing System-Others (except for phosphates etc., Hydrogen Carbonates etc.)
Fire Extinguisher Discharging Jet Water/Spraying Water
Fire Extinguisher Discharging Jet Loaded Liquid
Fire Extinguisher Discharging Dry Extinguishing agents-Others (except for phosphates etc., Hydrogen Carbonates etc.)
Water Bucket or Water Tank
*Cabinet Order Concerning the Control of Hazardous Materials (Attached Table 5) Group 4 Hazardous Materials

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

Special extinguishing method

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

Personal 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

Liquid: Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.
Solid: Sweep up, place in a bag and hold for waste disposal.

Preventive measures for secondary accident

Collect spillage.

Section 7. Handling and storage

Precautions for safe handling

Engineering measures

(Measures to prevent operator exposure)

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

(Measures to prevent 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.

(Local ventilation/general ventilation)

Exhaust/ventilator should be available.

(Precautions)

Avoid contact with skin.
Avoid contact with eyes.

Advice on safe handling

Obtain, read and follow all safety instructions before use.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash hands and contaminated parts thoroughly after handling.
When using do not eat, drink or smoke.

Avoidance of contact

See Section 10: Stability and Reactivity.

Advice on general occupational hygiene

Wash hands thoroughly after handling.
Do not touch eyes.
Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

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.

Safe packaging material

Use closed unbreakable containers.

Section 8. Exposure controls/personal protection

Control parameters

Permissible concentration

Administrative Control Levels and Concentration standard value

(4-Methyl-2-pentanone)
Japan control value 20ppm
(Benzene)
Japan control value 1ppm

Occupational exposure limit values

The Japan Society for Occupational Health

(4-Methyl-2-pentanone)
20ppm; 82mg/m3 (skin)
(Benzene)
Individual excess lifetime risk of cancer: 10E-3, Reference value: 1ppm; Individual excess lifetime risk of cancer: 10E-4, Reference value: 0.1ppm (skin)

ACGIH

(4-Methyl-2-pentanone)
TWA: 20ppm; STEL: 75ppm (URT irr; dizziness; headache)
(Benzene)
TWA: 0.02ppm (Myelodysplastic syndrome; acute myeloid leukemia; leukemia; hematohematologic eff; chromosomal dam)

Notation

(Benzene)
Skin

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, such as personal protective equipment

Recommend to use protective equipment in conformity with the standards.
Use appropriate protective equipment in accordance with local/national regulation.

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/face 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

Physical state: Liquid

Color: Colorless, Clear
Odor: Characteristic odour
Melting point/Freezing point: -84.7℃
Boiling point or initial boiling point and boiling range: (4-Methyl-2-pentanone)117～118℃
Flammability data is not available.
Lower and upper explosion limit/flammability limit:
Lower explosion limit: 1.4 vol %
Upper explosion limit: 7.5 vol %
Flash point: (4-Methyl-2-pentanone)(C.C.) 14℃
Auto-ignition temperature: (4-Methyl-2-pentanone)460℃
Decomposition temperature data is not available.
pH data is not available.
Kinematic viscosity data is not available.
Solubility:
Solubility in water: 1.91 g/100 ml (20℃)
Solubility in solvent data is not available.
Partition coefficient n-octanol/water (log value): 1.38
Vapor pressure: 2.1 kPa (20℃)
Density and/or relative density: 0.8
Relative vapor density (Air=1): 3.45
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
The vapour mixes well with air, explosive mixtures are easily formed.
The substance can form explosive peroxides on exposure to air. Reacts violently with strong oxidants and strong reducing agents. (ICSC 0511)
Conditions to avoid
Contact with incompatible materials.
Contact with fire source.
Incompatible materials
Strong oxidizing agents, Strong reducing agents
Hazardous decomposition products
Carbon oxides, Explosive mixtures

Section 11. Toxicological Information

Information on toxicological effects
Acute toxicity
Acute toxicity (Oral)
[Data for components of the product]
[NITE-CHRIP]
(4-Methyl-2-pentanone)

rat LD50: 2080 mg/kg (source: NITE)
(Benzene)
male rat LD50: 3400 - 5600 mg/kg (OECD TG 401, GLP) (source: NITE)
Acute toxicity (Dermal)
[Data for components of the product]
[NITE-CHRIP]
(4-Methyl-2-pentanone)
rabbit LD50: > 3000 mg/kg (source: NITE)
(Benzene)
rabbit LD50: > 8200 mg/kg (source: NITE)
Acute toxicity (Inhalation)
[Product]
Category 3, Toxic if inhaled
[Data for components of the product]
[NITE-CHRIP]
(4-Methyl-2-pentanone)
vapor: rat LC50: 8.2 - 16.4 g/m3 (4-hour) (source: NITE)
(Benzene)
vapor: female rat LC50: 13700 ppm (4-hour) (source: NITE)
Skin corrosion/irritation
[Data for components of the product]
[NITE-CHRIP]
(Benzene)
Category 2 (source: NITE)
Serious eye damage/irritation
[Product]
Category 2, Causes serious eye irritation
[Data for components of the product]
[NITE-CHRIP]
(4-Methyl-2-pentanone)
Category 2B (source: NITE)
(Benzene)
Category 2A (source: NITE)
Allergenic and sensitizing effects data is not available.
Mutagenic effects data is not available.
Carcinogenicity
[Product]
Category 1B, May cause cancer
[Data for components of the product]
[NITE-CHRIP]
(4-Methyl-2-pentanone)
Category 1B (source: NITE)
[IARC]
(4-Methyl-2-pentanone)
Group 2B : Possibly carcinogenic to humans
(Benzene)
Group 1 : Carcinogenic to humans
[ACGIH]
(4-Methyl-2-pentanone)
A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans

(Benzene)
A1: Confirmed Human Carcinogen
[JSOH]
(4-Methyl-2-pentanone)
Group 2B: The agents which are probably or possibly carcinogenic to humans
(Benzene)
Group 1: The agents which are carcinogenic to humans
[NTP]
(Benzene)
Known : Known to be Human Carcinogens
[EU]
(4-Methyl-2-pentanone)
Category 2; Substances suspected human carcinogens
(Benzene)
Category 1A; Substances known to have carcinogenic potential for humans

Reproductive toxicity data is not available.

Specific target organ toxicity – single exposure

[Product]
Category 3, May cause respiratory irritation
Category 3, May cause drowsiness or dizziness

[Data for components of the product]
[NITE-CHRIP]
(4-Methyl-2-pentanone)
Category 3 (Respiratory tract irritation), Category 3 (Narcotic effects) (source: NITE)
(Benzene)
Category 3 (Respiratory tract irritation), Category 3 (Narcotic effects) (source: NITE)

Specific target organ toxicity – repeated exposure

[Product]
Category 1, Causes damage to organs through prolonged or repeated exposure

[Data for components of the product]
[NITE-CHRIP]
(4-Methyl-2-pentanone)
Category 1 (central nervous system) (source: NITE)

Aspiration hazard

[Data for components of the product]
[NITE-CHRIP]
(Benzene)
Category 1 (source: NITE)

Section 12. Ecological Information

Toxicity

Aquatic toxicity

[Data for components of the product]
Hazardous to the aquatic environment, short-term (acute)
[NITE-CHRIP]
(4-Methyl-2-pentanone)
Crustacea (Artemia salina) 24-hour LC50: 1250 mg/L (source: NITE)
Fish (Pimephales promelas) 96-hour LC50: 505 mg/L (source: NITE)
(Benzene)

Fish (Oncorhynchus mykiss) 96-hour LC50: 5.3 mg/L (source: NITE)
Algae (Raphidocelis subcapitata) 72-hour ErC50: 29 mg/L (source: NITE)
Hazardous to the aquatic environment, long-term (chronic)
[NITE-CHRIP]
(4-Methyl-2-pentanone)
Crustacea (Daphnia magna) 21-day NOEC (reproduction): 7.8 - 39 mg/L (source: NITE)
Fish (Pimephales promelas) 31-day NOEC (growth): 57 mg/L (source: NITE)
(Benzene)
Fish (Pimephales promelas) 32-day NOEC: 0.8 mg/L (source: NITE)

Water solubility
(4-Methyl-2-pentanone)
1.91g/100 mL (20℃) (source: ICSC, 1997)
(Benzene)
0.18 g/100 mL (25℃) (source: ICSC, 2016)

Persistence and degradability
[Data for components of the product]
(4-Methyl-2-pentanone)
Rapidly degradable (Degradation rate: 84% (by BOD); 97.1% (by TOC); 100% (by GC)) (source: NITE)
(Benzene)
Not rapidly degradable (Degradation rate: 39 - 41% (by BOD)) (source: NITE)

Bioaccumulative potential
[Data for components of the product]
(4-Methyl-2-pentanone)
log Pow: 1.38 (source: ICSC, 1997)
(Benzene)
log Pow: 2.13 (source: ICSC, 2016)

Mobility in soil
Mobility in soil data is not available.

Other adverse effects
Ozone depleting chemical data is not available.

Section 13. Disposal considerations

Waste treatment methods

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

Section 14. Transport Information

UNRTDG
UN number : UN1245
UN Proper Shipping Name : METHYL ISOBUTYL KETONE
Transport hazard class(es) : 3
Packing group : II

IMDG Code (International Maritime Dangerous Goods Regulations)
UN number : UN1245
UN Proper Shipping Name : METHYL ISOBUTYL KETONE
Transport hazard class(es) : 3

Packing group : II

IATA (Dangerous Goods Regulations)

UN number : UN1245

UN Proper Shipping Name : METHYL ISOBUTYL KETONE

Transport hazard class(es) : 3

Hazard labels : Flamm. liquid

Packing group : II

Environmental hazards

Marine pollutants (yes/no) : no

Environmentally hazardous substance/mixture (yes/no) : no

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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

Benzene; 4-Methyl-2-pentanone

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 23rd edit., 2023 UN
IMDG Code, 2024 Edition (Incorporating Amendment 42-24)
IATA Dangerous Goods Regulations (67th Edition) 2026
2024 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2026 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2025
JIS Z 7253 : 2025
Recommendation of occupational exposure limits (2024-2025) (JSOH)
Supplier's data/information

General Disclaimer

Please provide SDS to customers for selling or transferring.
All chemicals have unknown hazard. Handle the product with care.
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 Data published in Japan (National Institute of Technology and Evaluation (NITE) Chemical Risk Information Platform (NITE-CHRIP), up to FY2024).