

## Safety Data Sheet

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### 1. Chemical product and company identification

Product name : 4-METHYL-2-PENTANONE

#### Company information

Name of manufacturer : KANTO CHEMICAL CO., INC.  
 Address : 2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, Japan  
 Name of section : Electronic materials division technical department  
 Telephone number : +81-3-6214-1080  
 Facsimile number : +81-3-3241-1043  
 Mail address : el-info@kanto.co.jp  
 Reference No : GE00022 1.3  
 Recommended uses and restrictions : Electronic chemicals

### 2. Hazards identification

#### GHS classification

Physical hazards	Flammable liquids	Category 2
Health hazards	Acute toxicity (inhalation:vapors)	Category 3
	Serious eye damage/eye irritation	Category 2B
	Carcinogenicity	Category 1B
	Specific target organ toxicity (single exposure)	Category 3 (narcosis)
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)
	Specific target organ toxicity (repeated exposure)	Category 1 (central nervous system)

Hazard pictograms



Signal word : Danger

Hazard statements : Highly flammable liquid and vapor  
 Causes eye irritation  
 Toxic if inhaled  
 May cause respiratory irritation  
 May cause drowsiness or dizziness  
 May cause cancer  
 Causes damage to organs (central nervous system) through prolonged or repeated exposure

#### Precautionary statements

Prevention : Do not handle until all safety precautions have been read and understood.  
 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

- Keep container tightly closed.  
Ground and bond container and receiving equipment.  
Use explosion-proof electrical/ventilating/lighting equipment.  
Use only non-sparking tools.  
Take action to prevent static discharges.  
Do not breathe mist/vapors.  
Wash hands, forearms and face thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves/protective clothing/eye protection/face protection.
- Response : IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF exposed or concerned: Get medical advice/attention. Call a POISON CENTER or doctor.  
Call a POISON CENTER or doctor if you feel unwell. Get medical advice/attention if you feel unwell.  
If eye irritation persists: Get medical advice/attention.
- Storage : Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
- Disposal : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

### 3. Composition/information on ingredients

- Distinction of substance or mixture : Substance
- Synonyms : Methyl iso-butyl ketone, Methyl isobutyl ketone, MIBK

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
4-Methyl-2-pentanone	min. 99.5	(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> CO CH <sub>3</sub>	Listed	203-550-1	108-10-1

### 4. First aid measures

#### First aid measures

- First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately get medical treatment.
- First-aid measures after skin contact : Wash the affected areas under running water.
- First-aid measures after eye contact : Wash the affected areas under running water for at least 15 minutes. If necessary, get medical treatment.
- First-aid measures after ingestion : The chemical is volatile. Do not induce vomiting because it increases the risk of aspiration into the lungs. Get medical attention immediately. If necessary, rinse mouth with water.

#### Most Important Symptoms/Effects



Symptoms/effects : Overexposure may cause anesthetic action, headache, dizziness, tunnel vision, nausea, or unconsciousness.

## 5. Fire fighting measures

Suitable extinguishing media : Dry chemical, CO<sub>2</sub>, dry sand, or alcohol-resistant foam  
 Unsuitable extinguishing media : Water spray, Foam extinguisher  
 Firefighting instructions : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.  
 Fight fire from windward.  
 Dry chemical powder, carbon dioxide or dry sand should be used for small fires. Alcohol-resistant foam extinguisher is effective for a large scale fire.  
 Personal protection (Emergency response) : Firefighters should wear protective equipment.

## 6. Accidental release measures

### Personal Precautions, Protective Equipment and Emergency Procedures

General measures : Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Remove all sources of ignition. Keep away personnel except for authorized ones from spillage area by stretching ropes.

### Environmental precautions

Environmental precautions : Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

### Methods and Equipment for Containment and Cleaning up

For containment : Absorb spill with inert material (e.g, diatomaceous earth, sand) and flush spillage area with copious amounts of water.  
 Remove nearby sources of ignition and prepare extinguishing media.

## 7. Handling and storage

### Handling

Technical measures : Wear proper protective equipment to avoid contact with skin or inhalation of vapor. Fire is strictly prohibited.  
 Ventilate well at working places.  
 Precautions for safe handling : Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas.  
 Do not allow contact with oxidizing substances.

### Storage

Storage conditions : Store in a dark, cool place and tightly closed.  
 Material used in packaging/containers : Glass, stainless steel.  
 Do not use vinyl chloride resin, acrylic resin, polystyrene etc.



## 8. Exposure controls / Personal protection equipment

ACGIH TWA	20 ppm
ACGIH STEL	75 ppm

Appropriate engineering controls : Use with an enclosed system or a local exhaust ventilation.

### Protective equipment

Respiratory protection : Chemical cartridge respirator with an organic vapor cartage or airline respirator

Hand protection : Impervious protective gloves

Eye protection : Safety goggles

Skin and body protection : Protective clothing, protective boots

## 9. Physical and chemical properties

Physical state : Liquid

Color : Colorless.

Odor : Slight ketone odor

pH : No data available

Melting point : -84.7 ° C

Freezing point : No data available

Boiling point : 115.9 ° C

Flash point : 15.6 ° C

Auto-ignition temperature : 465 ° C

Decomposition temperature : No data available

Flammability : Flammable

Vapor pressure : 22 hPa (21.7°C)

Relative density : No data available

Density : 0.796 g/cm<sup>3</sup> (25°C)

Relative gas density : 3.45

Solubility : Organic solvents: Readily soluble in ethanol, diethyl ether, benzene.  
Water: 1.91 % (25°C)

Partition coefficient n-octanol/water (log Pow) : 1.31

Explosive limits (vol %) : 7.6 - 1.35 vol %

Viscosity, kinematic: : 0.69 mm<sup>2</sup>/s (25°C)

Particle characteristics : No data available

## 10. Stability and reactivity

Reactivity : May react with oxidizing substances.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Stable under normal conditions of use.

Conditions to avoid : Light, heat.

Incompatible materials : Oxidizing substances.

Hazardous decomposition : Carbon monoxide.

products

## 11. Toxicological information

Acute toxicity (oral)	:	No classification rat LD50=2080mg/kg
Acute toxicity (dermal)	:	No classification rabbit LD50>3000mg/kg
Acute toxicity (inhalation)	:	No classification (gas) Toxic if inhaled Classification not possible (dust, mist)
Acute toxicity (vapor) - Description	:	rat LC50=1986-3936ppm/4h
Skin corrosion/irritation	:	No classification There is a report that in a skin irritation test with rabbits, as a result of an occlusive application with this substance for 10 hours, erythema was persistent until after 24 hours. In addition, there is a report that in a skin irritation test with guinea pigs, as a result of an application of this substance (5 or 10 mL), slight irritation was observed.
Serious eye damage/irritation	:	Causes eye irritation There is a report that in an eye irritation test (OECD TG 405) with rabbits, as a result of application with a 0.1 mL undiluted solution of this substance, corneal opacity, conjunctival redness and conjunctivitis were observed, but they resolved within 7 days. In addition, there is a report that in another test with rabbits, as a result of application with a 0.1 mL undiluted solution of this substance, irritation was observed within 10 minutes after application, and symptoms resolved after 60 hours. From the above, this substance was classified into category 2B.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	Classification not possible
Germ cell mutagenicity	:	No classification As for in vivo, a micronucleus test with mouse bone marrow cells was negative. As for in vitro, bacterial reverse mutation tests, a chromosome aberration test, a micronucleus test, and an unscheduled DNA synthesis assay with cultured mammalian cells were negative. There was an equivocal result in a mouse lymphoma test with cultured mammalian cells, but it was difficult to judge positive since there was no dose dependency.
Carcinogenicity	:	May cause cancer In a 2-year inhalation exposure study in rats, renal tubular adenomas and adenomas and carcinomas increased in frequency in males and renal mesenchymal malignancies in females. In addition, in a 2-year inhalation exposure study in mice, an increased frequency of hepatocellular adenomas and an increased total frequency of hepatocellular adenomas and carcinomas were observed in both sexes. Since there was an increased incidence of tumours including malignancy in the two species, it was classified into category 1B because there was adequate evidence of carcinogenicity in animal studies.
Reproductive toxicity	:	Classification not possible



- STOT-single exposure : May cause drowsiness or dizziness  
 May cause respiratory irritation  
 In humans, in inhalation exposure, cough, headache, sore throat, dizziness, narcotic effects, central nervous system suppression, nausea, vomiting, diarrhea, weakness, anorexia, loss of consciousness were reported and, in oral ingestion, abdominal pain in addition to these symptoms were reported. As for experimental animals, narcotic effects in inhalation exposure (higher concentration) with mice and guinea pigs and central nervous system depression, incoordination, and collapse in other tests with rats were reported. From the above, this substance has respiratory tract irritating potential and narcotic effects, and it was classified into category 3 (respiratory tract irritation, narcosis).
- STOT-repeated exposure : Causes damage to organs (central nervous system) through prolonged or repeated exposure  
 In epidemiological studies on 19 workers who were exposed to this substance for 20 to 30 minutes daily during the operation of a centrifuge at an Italian business place, the air concentration of this substance was 500 ppm near the centrifuge, and 80 ppm in other rooms. In addition to acute irritation symptoms in the eye, nose, and throat, more than half the workers out of 19 complained of headache, anorexia, weakness, stomach ache, nausea, and vomiting as subjective symptoms, and a few workers complained of insomnia, lethargy, and chest pain, but clinical chemistry results were within the normal range for all of the workers. It is described that even in a follow-up study conducted five years later (the air concentrations of this substance: 100-105 ppm near the centrifuge, 50 ppm elsewhere), a few workers out of the remaining 14 answered that the central nervous symptoms and gastrointestinal symptoms persisted. From the above, this substance was classified into category 1 (central nervous system).
- Aspiration hazard : Classification not possible

## 12. Ecological information

### Ecotoxicity

- Aquatic acute : No classification  
 Artemia salina EC50=1250mg/L/24h
- Aquatic chronic : No classification  
 Pimephales promelas NOEC=57mg/L/31-day

### Persistence and degradability

Readily biodegradable  
 BOD : 84%

### Bioaccumulative potential

Low bioconcentration  
 log Pow : 1.31

### Mobility in soil

High mobility  
 Koc : 70

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**Hazardous to the ozone layer**

Ozone : Classification not possible

**13. Disposal considerations**

Ecological waste information : Burn in a chemical incinerator equipped with an afterburner and a scrubber. Or entrust approved waste disposal companies with the disposal.

Contaminated container and packaging : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

**14. Transport information****International Regulations****Transport by sea(IMDG)**UN-No. (IMDG) : 1245  
Proper Shipping Name (IMDG) : METHYL ISOBUTYL KETONE  
Packing group (IMDG) : II  
Transport hazard class(es) : 3

(IMDG)

**Air transport(IATA)**UN-No. (IATA) : 1245  
Proper Shipping Name (IATA) : Methyl isobutyl ketone  
Packing group (IATA) : II  
Transport hazard class(es) : 3

(IATA)

Marine pollutant : Not applicable

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**Pollutant category : Z  
MFAG-No : 127**15. Regulatory information**

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

**16. Other information**Data sources : Solvents Handbook, T, Asahara et al, Kodansha Scientific Ltd. (1976) .  
Dangerous Properties of Industrial Materials, 6th ed. N. I. Sax Van Nostrand Reinhold Company (1984) .  
Handbook of Dangerous Substances Springer-Verlag Tokyo (1991) .  
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .  
NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully. The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements. The information herein is only provision of information, and it does not represent a guarantee the properties of the product. The Safety Data Sheet (SDS) is prepared based on JIS Z7253.