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SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.2
Creation Date: July 15, 2019
Revision Date: August 08, 2025

SECTION 1: Identification

1.1 GHS Product identifier

Product name 4-Methyl-2-Pentanone

1.2 Other means of identification

Product number CCEM500414
Other names 4-methylpentan-2-one; MIBK; 2-Pentanone, 4-methyl-

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.
Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.
Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou
Telephone +86-20-81960175

1.5 Emergency phone number

Emergency phone number +86-20-81960175
Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Flammable liquids, Category 2
Eye irritation, Category 2
Acute toxicity - Category 4, Inhalation
Specific target organ toxicity – single exposure, Category 3

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word Danger
Hazard statement(s)
H225 Highly flammable liquid and vapour
H319 Causes serious eye irritation
H332 Harmful if inhaled
H335 May cause respiratory irritation

Precautionary statement(s)
Prevention
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.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P264 Wash ... thoroughly after handling.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.

Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. P370+P378 In case of fire: Use ... to extinguish. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P317 Get medical help. P319 Get medical help if you feel unwell.
Storage	P403+P235 Store in a well-ventilated place. Keep cool. P403+P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up.
Disposal	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
4-Methyl-2-Pentanone	4-methylpentan-2-one	108-10-1	203-550-1	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Vapor causes irritation of eyes and nose; high concentrations cause anesthesia and depression. Liquid dries out skin and may cause dermatitis; irritates eyes but does not injure them. (USCG, 1999)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

INHALATION: Symptoms: Cough. Diarrhea. Dizziness. Headache. Nausea. Sore throat. Unconsciousness. Vomiting. Weakness. Loss of appetite. First aid: Fresh air, rest. Refer for medical attention. SKIN: Symptoms: Dry skin. Redness. Pain. First aid: Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention. EYES: Symptoms: Redness. Pain. First aid: First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. INGESTION: Symptoms: Abdominal pain. First aid: Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Water should not be used, since this may cause the fire to spread, though a water spray can be used to cool containers.

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Irritating vapors are generated when heated. Behavior in Fire: Vapors may travel a considerable distance and ignite. (USCG, 1999)

5.3 Special protective actions for fire-fighters

Use powder, AFFF, foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Evacuate and restrict persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources. Establish forced ventilation to keep levels below explosive limit. Absorb liquids in vermiculite, dry sand, earth, peat, carbon, or similar material and deposit in sealed containers. Oil-skimming equipment and sorbent foams can be applied to slick if done immediately. Keep this chemical out of a confined space ... because of the possibility of an explosion ... It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations. If employees are required to clean up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants. Well closed.... OPEN LIGHTS OR OTHER AGENCIES LIABLE TO IGNITE THE VAPOR SHOULD BE EXCLUDED FROM THOSE AREAS WHERE LIQUID IS BEING STORED OR USED. KETONES

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 20 ppm as TWA; 75 ppm as STEL; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued.MAK: 83 mg/m3, 20 ppm; peak limitation category: I(2); skin absorption (H); pregnancy risk group: C.EU-OEL: 83 mg/m3, 20 ppm as TWA; 208 mg/m3, 50 ppm as STEL

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety spectacles.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid.
Colour	Colorless liquid
Odour	Pleasant odor
Melting point/freezing point	-84.7 °C.
Boiling point or initial boiling point and boiling range	117 - 118 °C. Atm. press.:1 013 hPa.
Flammability	Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 1.2% by volume @ 200 deg F (93 deg C); Upper flammable limit: 8.0% by volume @ 200 deg F (93 deg C)
Flash point	23 °C. Atm. press.:Atmospheric pressure was not reported.
Auto-ignition temperature	448 °C. Atm. press.:Not reported. Remarks:The atmospheric pressure is not reported.
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	dynamic viscosity (in mPa s) = 0.545. Temperature:25.0°C.;dynamic viscosity (in mPa s) = 0.406. Temperature:50.0°C.

Solubility	19 g / L (20 °C)
Partition coefficient n-octanol/water	log Pow = 1.9.;Pow = 79.
Vapour pressure	2.64 kPa. Temperature:25 °C. Remarks:2.64 kPa at 25°C.
Density and/or relative density	0.801. Temperature:20 °C.
Relative vapour density	3.5 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

The substance can form explosive peroxides on exposure to air. Reacts violently with strong oxidants and strong reducing agents.

10.2 Chemical stability

Stable liquid

10.3 Possibility of hazardous reactions

Flammable liquid when exposed to heat, flame, or oxidizers.The vapour mixes well with air, explosive mixtures are easily formed.METHYL ISOBUTYL KETONE is incompatible with caustic soda and other strong alkalis, hydrochloric acid, sulfuric acid and other strong inorganic acids, amines and oxidizing agents such as hydrogen peroxide, nitric acid, perchloric acid and chromium trioxide. It reacts violently with potassium tert-butoxide. It reacts vigorously with reducing materials. (NTP, 1992).

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Able to form unstable and explosive peroxides on contact with air. Reacts violently with strong oxidizers, potassium tert-butoxide, strong acids, aliphatic amines, reducing agents.

10.6 Hazardous decomposition products

no data available

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 - rat - 2.08 g/kg body weight.
- Inhalation: LC50 - rat (male) - > 2 000 - < 4 000 ppm.
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Epa-1, tlv-a3

Reproductive toxicity

No information is available on the reproductive or developmental effects of methyl isobutyl ketone in humans. Maternal toxicity and neurological effects and increased liver and kidney weights in fetuses were observed in rats and mice exposed to methyl isobutyl ketone by inhalation.

STOT-single exposure

The substance and the vapour are irritating to the eyes, skin and respiratory tract. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system at high concentrations. This may result in narcosis.

STOT-repeated exposure

Repeated or prolonged contact with skin may cause dermatitis.

Aspiration hazard

A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - Danio rerio (previous name: Brachydanio rerio) - > 179 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - > 200 mg/L - 48 h.
- Toxicity to algae: TGK (Toxische Grenzkonzentration or "toxicity threshold concentration") - Scenedesmus quadricauda - 725 mg/L - 8 d.
- Toxicity to microorganisms: TGK (Toxische Grenzkonzentration or "toxicity threshold concentration") - Pseudomonas putida - 275 mg/L - 16 h.

12.2 Persistence and degradability

AEROBIC: The theoretical BOD of methyl isobutyl ketone (5 ppm) in seawater was measured as 27.6% and 30.6% over a 5 day incubation period(1). The theoretical BOD of methyl isobutyl ketone in freshwaters seeded with settled domestic sewage was 56%, 66%, 69% and 69%, over 5, 10, 15 and 20 day incubation periods(2). The theoretical BOD of methyl isobutyl ketone in synthetic seeded seawaters with settled domestic sewage was 15%, 46%, 50% and 53%, over 5, 10, 15 and 20 day incubation periods(2). The theoretical BOD of a 100 mg/L sample of methyl isobutyl ketone in an activated sludge inoculum was 84% over a 2 week incubation period(3). Methyl isobutyl ketone was degraded 78-84% with a degradation rate of 0.24 1/hr in experiments using activated sludge inoculum, 100 mg/L of methyl isobutyl ketone, 30 mg/L biomass and a temperature of 28 deg C for 28 days(4). Methyl isobutyl ketone had influent concns of 8100, 8100 and 190 ug/L and effluent concns of 27.5, 40.5 and <10 ug/L using an activated sludge with a daily mass loading of COD/bacterial mass ratios of 0.1, 0.36 and 0.48, respectively(5). Methyl isobutyl ketone was degraded from 855 ug/L to 143 ug/L in 12 hours and from 3385 ug/L to 1098 ug/L in 8 hours using activated sludge that was acclimated for 3 weeks(6). In a wastewater stream, a BOD of 2.06 g of oxygen/g and a COD of 2.16 g of oxygen/g for methyl isobutyl ketone were found(7).

12.3 Bioaccumulative potential

An estimated BCF of 2 was calculated in fish for methyl isobutyl ketone(SRC), using a log Kow of 1.31(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

The Koc of methyl isobutyl ketone is estimated as 120(SRC), using a log Kow of 1.31(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that methyl isobutyl ketone is expected to have high mobility in soil.

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN1245 (For reference only, please check.)	IMDG: UN1245 (For reference only, please check.)	IATA: UN1245 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: METHYL ISOBUTYL KETONE (For reference only, please check.)	IMDG: METHYL ISOBUTYL KETONE (For reference only, please check.)	IATA: METHYL ISOBUTYL KETONE (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)	IMDG: 3 (For reference only, please check.)	IATA: 3 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: II (For reference only, please check.)	IMDG: II (For reference only, please check.)	IATA: II (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No	IMDG: No	IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
4-methylpentan-2-one	4-methylpentan-2-one	108-10-1	203-550-1
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date	July 15, 2019
Revision Date	August 08, 2025

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Check for peroxides prior to distillation; eliminate if found.

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

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Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.