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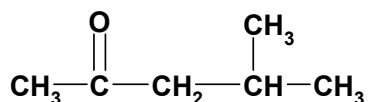
# Methyl isobutyl ketone

*MIBK*

*MSDS*

## Description

Methyl isobutyl ketone, MIBK, a medium boiling ketone is a stable water-white liquid. Like acetone and MEK, it displays strong solvent power for cellulose esters, vinyl polymers and copolymers, and most natural and synthetic resins. MIBK is a medium evaporating solvent with excellent solvency characteristics and with a high tolerance for hydrocarbon diluents.



4-methyl-2-pentanone, hexanone, MIBK.

CAS Registry Number 108-10-1

EINECS Number 203-550-1

## Physical properties of pure product

Property	Unit	Value	Test method
Flash point (Abel)	°C	14	IP 170
Refractive index		1.396	ASTM D 1218
Vapour pressure at 20°C	kPa	2.0	
Vapour pressure at 50°C	kPa	9.3	
Antoine constant A <sup>(1)</sup>		6.31286	
Antoine constant B		1449.92	
Antoine constant C		220.093	
Temperature limits for the Antoine equation	°C	-23 to +122	
Freezing point	°C	-84	ASTM D 97
Coefficient of cubic expansion	10 <sup>-4</sup> /°C	11.0	
Thermal conductivity	W/m/°C	0.14	

Specific heat	kJ/kg/°C	1.92	
Latent heat of evaporation	kJ/kg	360	
Heat of combustion	kJ/kg	30730	
Electrical conductivity	pS/m	3×10 <sup>7</sup>	ASTM D 4308
Dielectric constant		13.11	
Surface tension	mN/m	23.7	
Dynamic viscosity	mPa.s	0.59	ASTM D 445
Molecular weight		100.16	
Miscibility with water			
MIBK in water	% wt.	2.0	
Water in MIBK	% wt.	2.4	
Azeotrope with water			
Boiling point	°C	87.9	
MIBK content	% wt.	75.7	

All properties at 20 °C unless otherwise stated.

<sup>(1)</sup> The vapour pressure, between the specified temperature limits, can be calculated using the Antoine equation:  

$$\log_{10} P = \frac{A - B}{T + C}$$
, where P is the vapour pressure in kPa and T is the temperature in °C.

For more information please refer to MSDS, available from your local sales representatives.

## Solvent properties

Property	Value	Test method
Hildebrand solubility parameter	8.4	
Hydrogen bonding index	10.5	
Fractional polarity	0.315	
Relative evaporation rate (nBuAc=1)	1.6	ASTM D 3539
Relative evaporation rate (ether=1)	7.2	DIN 53170

## Safety data

Property	Unit	Value	Test method
Flash point (Abel)	°C	14	IP 170
Lower explosive limit in air	% v/v	1.3	
Upper explosive limit in air	% v/v	8.0	
Auto-ignition temperature	°C	460	ASTM D2155
Saturated vapor concentration at 20 °C		77	calculated
Transport: ADR/RID class/item/label	g/m <sup>3</sup>	3/3B/3	
IMO UN number/label		1245/3	
class/packing group		3.2/2	

EC user label: Symbol	F
Risk phrases	none
Safety phrases	9, 16, 23, 33

## Test methods

- **ASTM methods** are published by the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa 19103, USA, and are available in Europe from ASTM European Office, 27/29 Knowl Piece, Wilbury Way, Hitchin, Herts, SG4 OSX, UK.
- **DIN standards** are published by Beuth Verlag GmbH, 1 Berlin, Burggrafenstrasse 4-7, Germany.
- **BS standards** are published by the British Standards Institution, Linford Wood, Milton Keynes, MK14 6LE, UK.
- **IP methods** are published by the Institute of Petroleum, 61 New Cavendish Street, London, W 1 M 8AR, UK.

## Specifications

Methyl isobutyl ketone can be supplied to meet the requirements of: ASTM D 1153, DIN 53247 and BS 1941. It can also be supplied to comply with the various requirements of the US FDA, pharmacopeias and military specifications. Please contact your local sales representatives if you need more details.

## Composition

Methyl isobutyl ketone is manufactured to the highest standards. It does not contain detectable quantities of heavy metals, chlorinated compounds or polycyclic aromatic hydrocarbons.

## Applications

MIBK is a natural choice in formulating nitrocellulose lacquers, acrylic, epoxy, polyurethane and vinyl resin coatings. MIBK may be used as a universal thinner for e.g. spray applications. As an extractant, this medium-boiling ketone finds use in the manufacture of antibiotics and in the dewaxing and deoiling of petroleum products. Other applications include its use as a component of synthetic rubber cements, adhesives, printing inks, as a carrier for crop protection formulations and as an ethyl alcohol denaturant. It is widely used in the manufacture of dry cleaning preparations, germicides, fungicides, textile coatings, leather finishes, electroplating solutions, pharmaceuticals, cosmetics and magnetic tapes.

## Storage and handling

- Advice on storage and handling may be obtained from your local dealer. Methyl isobutyl ketone is available from Kumho P&B chemicals, inc. in bulk and drums; details available on request.
- **Ventilation:** The areas where MIBK is handled should be ventilated to prevent the accumulation of explosive mixtures. Explosion-proof fans should be used in mechanical type ventilation system.
- **Normal handling:** MIBK is an extremely flammable liquid. Keep away from heat, sparks and flame. Electrically ground all handling equipment. Care should be taken in loading or unloading tank trucks of MIBK due to its flammability. Do not use air pressure to unload MIBK from container.
- **Storage:** Protect container against physical damage. Store in a cool, well ventilated location equipped with automatic sprinklers of fire extinguishing system. All MIBK storage must be electrically bonded and grounded to control static electricity. "Empty" container, unless thoroughly cleaned, must be assumed to have same hazards as full ones.

## Hazard information

- Methyl isobutyl ketone is highly flammable. Its vapor can readily form an explosive mixture in air.
- **Fire fighting:** Use carbon dioxide or dry chemical in case of small fires. Large and tank fires are best controlled with "alcohol" type foam. Water spray may be effective but a direct stream of water tends to spread the fire, and should not be used.
- **Health:** The substance affects the nervous system. Employees working in areas where MIBK is stored or handled should be aware of the hazards and be trained in proper handling and storage methods. Vapor concentration of 75 ppm cause minor irritation of eyes, nose and throat. Inhalation of higher concentration may cause headache, nausea, confusion, drowsiness, convulsions and coma. In case where exposures exceed 50ppm, as for cleaning large spills, respiratory protection may be required. Appropriate eye and skin protective equipment must be used whenever the possibility of MIBK contacts exists.
- **First Aid measures**
  - **In case of contact with eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the lower and upper lids. Contact a physician promptly.
  - **In case of contact with skin:** Immediately wash skin with soap and water while removing contaminated clothing.
  - **If Inhaled:** Remove the patient from contaminated sphere to fresh air. If not breathing, give artificial respiration. Obtain medical attention promptly.
  - **If swallowed:** Rinse mouth, give plenty of water to drink. Obtain medical attention promptly.

## **Waste disposal**

The disposal of waste MIBK and of materials contaminated with it is subject to government regulation regarding pollution and environmental protection.

For further advice please refer to Material Safety Data Sheet.

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