

Material Safety Data Sheet

Date Printed: 15/DEC/2004

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Version 1.6

According to 91/155/EEC

1 - Product and Company Information

Product Name	4-METHYL-2-PENTANONE, STANDARD FOR GC
Product Number	02474
Company	Sigma-Aldrich Pte Ltd #08-01 Citilink Warehouse Singapore 118529 Singapore
Technical Phone #	65 271 1089
Fax	65 271 1571

2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
4-METHYL-2-PENTANONE	108-10-1	203-550-1	606-004-00-4

Formula	C6H12O
Molecular Weight	100.16 AMU
Synonyms	Hexon (Czech) * Hexone (OSHA) * Isobutyl-methylketon (Czech) * Isobutyl methyl ketone * Isopropylacetone * Ketone, isobutyl methyl * Methyl-isobutyl-cetone (French) * Methylisobutylketon (Dutch, German) * Methyl isobutyl ketone (ACGIH:OSHA) * Metyloizobutyloketon (Polish) * 4-Methyl-pentan-2-on (Dutch, German) * 2-Methyl-4-pentanone * 4-Methyl-2-pentanone (Czech) * 4-Methyl-2-pentanone * Metilisobutilchetone (Italian) * 4-Metilpentan-2-one (Italian) * MIBK * MIK * RCRA waste number U161 * Shell MIBK

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Highly flammable. Harmful by inhalation. Irritating to eyes and respiratory system. Repeated exposure may cause skin dryness or cracking.

4 - First Aid Measures

AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

AFTER SKIN CONTACT

In case of contact, immediately wash skin with soap and copious amounts of water.

AFTER EYE CONTACT

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

5 - Fire Fighting Measures

EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

Unsuitable: Water may be effective for cooling, but may not effect extinguishment.

SPECIAL RISKS

Specific Hazard(s): Vapor may travel considerable distance to source of ignition and flash back. Emits toxic fumes under fire conditions.

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions. Forms explosive mixtures in air.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SPECIFIC METHOD(S) OF FIRE FIGHTING

Use water spray to cool fire-exposed containers.

6 - Accidental Release Measures

PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

7 - Handling and Storage

HANDLING

Directions for Safe Handling: Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE

Conditions of Storage: Keep container closed. Keep away from heat, sparks, and open flame.

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling. Wash contaminated clothing before reuse.

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	83
Poland		NDSCh	200
Poland		NDSP	-

EXPOSURE LIMITS - EUROPEAN UNION

Source	Type	Value
OEL	OEL	83 mg/m3 20 ppm

EXPOSURE LIMITS - DENMARK

Source	Type	Value
OEL	TWA	100 mg/m3 25 ppm

Remarks: H

EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	83 mg/m3 20 ppm

Remarks: =1=

Remarks: H,Y

EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	105 mg/m3 25 ppm

Remarks: H

EXPOSURE LIMITS - SWEDEN

Source	Type	Value
	LLV (Level)	100 mg/m3 25 ppm

EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	82 mg/m3 20 ppm

Remarks: M H C

EXPOSURE LIMITS - UNITED KINGDOM

Source	Type	Value
OEL	OEL	208 mg/m3 50 ppm
OEL	STEL	416 mg/m3 100 ppm

Remarks: Skin Biological Monitoring Guidance value

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

9 - Physical and Chemical Properties

Appearance Physical State: Liquid

Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	115 - 117 °C	
MP/MP Range	-80 °C	
Flash Point	14 °C	Method: closed cup
Flammability	N/A	
Autoignition Temp	459 °C	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	Lower: 1.2 % Upper: 8 %	
Vapor Pressure	15 mmHg	20 °C
SG/Density	0.8 g/cm3	
Partition Coefficient	N/A Log Kow: 1.31	
Viscosity	N/A	
Vapor Density	3.5 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	23.6 mN/m	20 °C
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water: 20 mg/ml H2O Other Solvents: SOLUBLE IN ALCOHOL, ETHER ACETONE, BENZENE CHLOR	

10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Oxidizing agents, Strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

11 - Toxicological Information

RTECS NUMBER: SA9275000

ACUTE TOXICITY

LD50

Oral

Rat

2080 mg/kg

LC50

Inhalation

Rat

100,000 mg/m3

LD50

Intraperitoneal

Rat

400 MG/KG

LD50
Oral
Mouse
1900 mg/kg

LC50
Inhalation
Mouse
23,300 mg/m3

LD50
Intraperitoneal
Mouse
268 MG/KG

LD50
Oral
Guinea pig
1600 mg/kg

LD50
Intraperitoneal
Guinea pig
800 MG/KG

IRRITATION DATA

Eyes
Human
200 ppm
15M

Skin
Rabbit
500 mg
24H
Remarks: Mild irritation effect

Eyes
Rabbit
40 mg
Remarks: Severe irritation effect

Eyes
Rabbit
0.1 ml
24H
Remarks: Moderate irritation effect

SIGNS AND SYMPTOMS OF EXPOSURE

Contact with eyes can cause redness, tearing, and blurred vision. Prolonged or repeated contact with skin can cause defatting and dermatitis. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: Causes eye irritation.
Inhalation: May be harmful if inhaled. Material is irritating to

mucous membranes and upper respiratory tract.
Ingestion: May be harmful if swallowed.

TARGET ORGAN INFORMATION

Nerves.

CHRONIC EXPOSURE - TERATOGEN

Species: Rat
Dose: 300 PPM/6H
Route of Application: Inhalation
Exposure Time: (6-15D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse
Dose: 3000 PPM/6H
Route of Application: Inhalation
Exposure Time: (6-15D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Fetal death.

Species: Mouse
Dose: 3000 PPM/6H
Route of Application: Inhalation
Exposure Time: (6-15D PREG)
Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Cardiovascular (circulatory) system.

12 - Ecological Information

ECOTOXICOLOGICAL EFFECTS

Test Type: EC50 Algae
Species: *Scenedesmus subspicatus*
Time: 48 h
Value: 980 - 2,000 mg/l

Test Type: EC50 Daphnia
Species: *Daphnia magna*
Time: 24 h
Value: 1,550 - 3,623 mg/l

Test Type: LC50 Fish
Species: *Leuciscus idus*
Time: 48 h
Value: 672 - 744 mg/l

Test Type: LC50 Fish
Species: *Pimephales promelas* (Fathead minnow)
Time: 96 h
Value: 496 - 593 mg/l

13 - Disposal Considerations

SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this

material is highly flammable. Observe all federal, state, and local environmental regulations.

14 - Transport Information

RID/ADR

UN#: 1245
Class: 3
PG: II
Proper Shipping Name: Methyl isobutyl ketone

IMDG

UN#: 1245
Class: 3
PG: II
Proper Shipping Name: Methyl isobutyl ketone
Marine Pollutant: No
Severe Marine Pollutant: No

IATA

UN#: 1245
Class: 3
PG: II
Proper Shipping Name: Methyl isobutyl ketone
Inhalation Packing Group I: No

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 606-004-00-4

INDICATION OF DANGER: F Xn

Highly Flammable. Harmful.

R-PHRASES: 11 20 36/37 66

Highly flammable. Harmful by inhalation. Irritating to eyes and respiratory system. Repeated exposure may cause skin dryness or cracking.

S-PHRASES: 9 16 29

Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking. Do not empty into drains.

COUNTRY SPECIFIC INFORMATION

Germany

WGK: 1

SWITZERLAND

SWISS POISON CLASS: 4

NORWAY

Labelling for organic solvents where the package is 1 liter or more.

YL-tall m3/l: 7619

YL-group: 5

Safety phrases: 38 42 210

In case of insufficient ventilation, wear suitable respiratory equipment. During fumigation/spraying wear suitable respiratory equipment. Use compressed air- or fresh air line breathing apparatus in confined spaces.

16 - Other Information

WARRANTY

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. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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