



**LEONID CHEMICALS PVT. LTD.,
BANGALORE**

An ISO-9001:2008 Certified Company

Quality Assurance Department

(CODE) DOCUMENT : WI

(CODE) SECTION : WI/SM

(DATE) : 01.04.2013

Issue : 02

Rev.: 00

Title: MATERIAL SAFETY DATA SHEET (MSDS): METHYL VINYL KETONE

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SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name: Methyl vinyl ketone

Catalog Numbers: M377

Synonyms: 3-Buten-2-one; MVK

CAS-No. : 78-94-4

Company Information:

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SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 2), H225

Acute toxicity, Oral (Category 2), H300

Acute toxicity, Inhalation (Category 1), H330

Acute toxicity, Dermal (Category 2), H310

Skin corrosion (Category 1B), H314

Skin sensitisation (Category 1), H317

Acute aquatic toxicity (Category 1), H400

Chronic aquatic toxicity (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

F Highly flammable R11

T+ Very toxic R26/27/28

C Corrosive R34

Xi Irritant R43

N Dangerous for the environment

R 50/53

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements



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Labelling according Regulation (EC) No 1272/2008

Signal word **Danger**

Hazard statement(s)

- H225 Highly flammable liquid and vapour.
H300 + H310
+ H330 Fatal if swallowed, in contact with skin or if inhaled
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash hands thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284 Wear respiratory protection.

Supplemental Hazard

Statements none

- 2.3 Other hazards
Lachrymator.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

- Synonyms : Vinyl methyl ketone
Methyl vinyl ketone
Formula : C₄H₆O
Molecular Weight : 70,09 g/mol
CAS-No. : 78-94-4
EC-No. : 201-160-6

Component	Classification	Concentration
Butenone		
CAS-No. 78-94-4	Flam. Liq. 2; Acute Tox. 2; Acute Tox. 1; Acute Tox. 2; Skin Corr. 1B; Skin Sens. 1;	<= 100 %
EC-No. 201-160-6	Aquatic Acute 1; Aquatic Chronic 1; H225, H300 + H310 + H330, H314, H317, H410	



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SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

no data available

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

SECTION 6: ACCIDENTAL RELEASE MEASURES



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- 6.1 Personal precautions, protective equipment and emergency procedures**
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.
- 6.2 Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
- 6.3 Methods and materials for containment and cleaning up**
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).
- 6.4 Reference to other sections**
For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

- 7.1 Precautions for safe handling**
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.
- 7.2 Conditions for safe storage, including any incompatibilities**
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Recommended storage temperature: 2 - 8 °C
- 7.3 Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

- 8.1 Control parameters**
Components with workplace control parameters
- 8.2 Exposure controls**
Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment
Eye/face protection



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Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.

Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact

Material : butyl-rubber
Minimum layer thickness : 0,3 mm
Break through time : 480 min
Material tested : Butoject

Splash contact

Material : Chloroprene
Minimum layer thickness : 0,6 mm
Break through time : 30 min
Material tested : Camapren
test method : EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).



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Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Discharge into the environment must be avoided.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Light yellow
odor	: odorless
pH	: No information available.
Vapor Pressure	: 130 mbar @ 28 °C
Vapor Density	: 2.4 (Air = 1.0)
Boiling Point/Range	: 80°C / 176°F@ 760 mmHg
Melting Point/Range	: No information available.
Flash Point	: -7°C / 19.4°F
Autoignition Temperature	: 370°C / 698°F
Explosion Limits	
Lower	: 2.1 vol%
Upper	: 15.6 vol%
Water Solubility	: miscible
Specific Gravity	: 0.864
Molecular Formula	: C ₄ H ₆ O
Molecular Weight	: 70.09

9.2 Other safety information

Surface tension 24 mN/m at 20 °C

Relative vapour density 2,42 - (Air = 1.0)

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

no data available



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10.2 Chemical stability

Stable under recommended storage conditions.

Contains the following stabiliser(s):

Acetic acid ($\geq 0,05$ - $\leq 0,2$ %)

Hydroquinone ($\geq 0,45$ - $\leq 0,6$ %)

10.3 Possibility of hazardous reactions

Hazardous polymerisation may occur.

10.4 Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5 Incompatible materials

Strong bases, Strong oxidizing agents, Strong reducing agents, Oxygen, Alkalis, Amines, Ammonia

10.6 Hazardous decomposition products

Other decomposition products - no data available

In the event of fire: see section 5

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - mouse - 23,3 mg/kg

LD50 Oral - rat - 23,1 mg/kg

LC50 Inhalation - rat - 4 h - 7 mg/m³

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitisation

Germ cell mutagenicity

Result: This material has shown a positive Ames test, an in vitro test that indicates a possible potential to produce a carcinogenic effect.

Histidine reversion (Ames)

Carcinogenicity

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans
(Hydroquinone)



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Reproductive toxicity

no data available

Specific target organ toxicity - single exposure

no data available

Specific target organ toxicity - repeated exposure

no data available

Aspiration hazard

no data available

Additional Information

RTECS: Not available

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea
Liver - Irregularities - Based on Human Evidence (Hydroquinone)

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to algae EC50 - Pseudokirchneriella subcapitata (green algae) - 0,12 - 0,13 mg/l - 96 h

12.2 Persistence and degradability

Biodegradability Biotic/Aerobic

Result: 0 % - Not readily biodegradable.

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

Very toxic to aquatic life with long lasting effects.
Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product



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Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR/RID: 1251 IMDG: 1251 IATA: 1251

14.2 UN proper shipping name

ADR/RID : METHYL VINYL KETONE, STABILIZED
IMDG : METHYL VINYL KETONE, STABILIZED
IATA : Methyl vinyl ketone, stabilized
Passenger Aircraft : Not permitted for transport
Cargo Aircraft : Not permitted for transport
Special Provisions : "Keep away from heat" label required.

14.3 Transport hazard class(es)

ADR/RID: 6.1 (3, 8) IMDG: 6.1 (3, 8) IATA: 6.1 (3, 8)

14.4 Packaging group

ADR/RID: I IMDG: I IATA: -

14.5 Environmental hazards

ADR/RID: yes IMDG Marine pollutant: yes IATA: no

14.6 Special precautions for user

no data available

SECTION 15: REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information



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Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Carc.	Carcinogenicity
Eye Dam.	Serious eye damage
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H300	Fatal if swallowed.
H300 + H310 + H330	Fatal if swallowed, in contact with skin or if inhaled
H302	Harmful if swallowed.
H310	Fatal in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H341	Suspected of causing genetic defects.
H351	Suspected of causing cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
Muta.	Germ cell mutagenicity
Skin Corr.	Skin corrosion
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitisation

Full text of R-phrases referred to under sections 2 and 3

F	Highly flammable
N	Dangerous for the environment
T+	Very toxic
R11	Highly flammable.
R22	Harmful if swallowed.
R26/27/28	Very toxic by inhalation, in contact with skin and if swallowed.
R34	Causes burns.
R40	Limited evidence of a carcinogenic effect.
R41	Risk of serious damage to eyes.
R43	May cause sensitisation by skin contact.
R50	Very toxic to aquatic organisms.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Xn	Harmful
R68	Possible risk of irreversible effects.



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SECTION 17 - ADDITIONAL INFORMATION

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Leonid Chemicals Pvt. Ltd. be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Leonid Chemicals Pvt. Ltd. has been advised of the possibility of such damages.



 Chemlabs	LEONID CHEMICALS PVT. LTD., BANGALORE An ISO-9001:2008 Certified Company Quality Assurance Department	(CODE) DOCUMENT : R/QPM/8.2.4/06 (CODE) SECTION : M377	 Issue : 02 Rev.: 00
Title: SPECIFICATION MANUAL – METHYLVINYLKETONE			1 Page of 1

Specification manual – Methylvinylketone

C₄H₆O

MW: 70.09

Product : Methylvinylketone
Description : Clear colourless liquid with characteristic odour
Cat No : M377
Cas No : 78-94-4
Prepared Date : 29-08-2011
Approved Date : 29-08-2011

REVISION HISTORY				
Issue/Rev	Description of Change	Author	Effective Date	
01/00	Initial Release	S. Paul Joshua	29.08.2011	
02/00	Reviewed no changes	S. Paul Joshua	NA	
Next Review Due :	02.04.2015			
To be reviewed by :	Head-QC/QA			

Sl.no.	Tests	Limits
1	Assay (GC)	≥ 98.0 %
2	Water	≤ 5 %
3	Density	0.850 g/mL
4	Boiling range	80°C

Approved By: S.Paul Joshua, Head Quality Control and Quality Assurance