

Material Safety Data Sheet

2-Butanone


Section 1 – PRODUCT AND COMPANY IDENTIFICATION

1. Product Identifier	2-Butanone; Methyl ethyl ketone; MEK
2. Recommended Use & Uses advised against	Uses for Laboratory and R&D, Industrial only
3. Information of Supplier	SAMCHUN PURE CHEMICAL CO.,LTD ADDRESS; (Mogok-dong) 117, Sandan-ro 16Beon-gil, Pyeongtaek-si, Gyeonggi-do, Korea Emergency Phone; 82-31-668-0700/3 Department; Safety & Environment dep. Web site; http://www.samchun.com

Section 2 – HAZARDS and DANGER IDENTIFICATION

1.GHS Classification· Identification	Flammable liquid	Category2
	Serious Eye Damage/Eye Irritation	Category2
	Skin Corrosion/Skin Irritation	Category2
	Specific Target Organ Toxicity (Single Exposure)	Category1
	Specific Target Organ Toxicity (Single Exposure)	Category3 -Respiratory tract irritation
	Specific Target Organ Toxicity (Single Exposure)	Category3 -Anesthetic action
	Specific Target Organ Toxicity (Repeated Exposure)	Category1

2. Label and Mark including Precautionary Statement

◦Label elements	
◦Signal word	Danger
◦Hazard · Danger statement	H225 Highly flammable liquid and vapour H315 Causes skin irritation H319 Causes serious eye irritation H370 Causes damage to organs (CNS, Kidney) H335 May cause respiratory irritation H336 May cause drowsiness or dizziness H372 Causes damage to organs (CNS) through prolonged or repeated exposure
◦Precautionary statement	
Precaution	P210 Keep away from heat/sparks/open flames/hot surfaces. . No smoking. P233 Keep container tightly closed. P240 Ground/bond container and receiving equipment. P241 Use explosion-proof electrical/ventilating/lighting equipment. P242 Use only non-sparking tools. P243 Take precautionary measures against static discharge. P280 Wear protective gloves/protective clothing/eye protection/face protection P264 Wash thoroughly after handling.

Precaution	P260 Do not breathe dust/fume/gas/mist/vapours/spray. P270 Do not eat, drink or smoke when using this product. P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P271 Use only outdoors or in a well-ventilated area.
Measures	P303+P361+P353 SKIN (or hair) all contaminated clothing IF ON Take off. Rinse skin with water / shower. P370+P378 In case of fire: Use (Section 5. explosions, according to the fire-fighting extinguishing agent suitable method) for extinction P321 Specific treatment (see Section 4. on this label). P302+P352 IF ON SKIN: Wash with plenty of water P332+P313 If skin irritation occurs: Get medical advice/attention. P362+P364 Take off contaminated clothing and wash before reuse P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P337+P313 If eye irritation persists: Get medical advice/attention. P308+P311 If exposed or concerns, call a poison center or physician P312 Call a POISON CENTER or doctor/physician if you feel unwell. P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P314 Get medical advice/attention if you feel unwell. P403+P235 Store in a well-ventilated place. Keep cool.
Storage	P405 Store locked up P403+P233 Store in a well-ventilated place. Keep container tightly closed.
Dispose	P501 Dispose of contents/container under related law and regulations

3. Other Hazard-Risk which are not included in the classification criteria

NFPA index(0~4steps) : Health=1, Fire=3, Reaction=0

By the flow of a substance or mixture that also can cause static electricity

Section 3 – COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical Name	Other Name	CAS No.	Content (%)
2-Butanone	Methyl Ethyl ketone	78-93-3	100

Section 4 – FIRST AID MEASURES

1. Eye Contact	Rinse with plenty of water for at least 15minutes and get medical attention immediately.
2. Skin Contact	Take off contaminated cloths and shoes immediately, wash with plenty of water and soap for at least 15minutes.
3. Inhalation	Move victim to fresh air. If breathing is difficult, give artificial respiration and get medical attention immediately.
4. Ingestion	Do not induce vomiting. Get medical advice/attention immediately.
5. Immediate medical attention and Notes for physician	Keep the medical personnel aware of the materials involved and take protective action. When ingested, consider gastric lavage and activated charcoal slurry administration

Section 5 – FIRE-FIGHT MEASURES

1. Suitable extinguish media	Powder extinguisher, foam extinguisher, carbon dioxide, water spray Inappropriate Extinguishing Media: N/A
2. Special hazards arising from the substance	Thermal decomposition products generate carbon oxides.
3. Special protective equipment and Precautions for fire-fighters	Move containers from fire area if you can do it without risk. When extinguishing a fire, be sure to wear personal protective equipment. If it is not possible to extinguish the fire, withdraw immediately. Keep containers cool by spraying with water for a long time, even after the fire is out. Isolate hazardous areas and deny access to people.

Section 6 – ACCIDENTIAL RELEASE MEASURES

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| 1. Personal precautions and Emergency procedures | Do not touch spilled material. Avoid inhalation and skin contact. In case of confined space, wear air respirator and ventilate and remove all sources of ignition. |
| 2. Environmental precautions | Minimize leak/spill, collect and keep leak/spill in container |
| 3. Methods and material for containment and cleaning up | Soak up with sand, clay and other inert absorbent material |

Section 7 – HANDLING AND STORAGE

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| 1. Precautions for safe Handling | Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. All containers should be grounded. |
| 2. Conditions for safe storage | Keep container tightly closed in a dry, cool and well-ventilated place.
Keep away from incompatible substances. |

Section 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

1. Occupational exposure limit, biological exposure limit

National law of Safety management of

Occupational Health and Safety Act

TWA : 200 ppm, 590mg m³

STEL : 300 ppm, 885mg/m³

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| 2. Appropriate Engineering controls | Ensure compliance with applicable exposure limits and operate local exhaust ventilation when working.
If the substance is at risk of explosion, ventilation equipment should be explosion-resistant. |
| 3. Personal protective equipment | |
| ◦ Respiratory protection | Wear respiratory protective mask for face type organic chemical according to the Chemical Substance Control Law when handling.
Respiratory protection must be certified by the Health and Safety Authority.
If you're concerned about the unknown concentration or other effect on the life or health depending on working conditions, wear supplied-air respirator, air respirator |
| ◦ Eye-protection | Handling so concerned about the human hazards due to chemicals should wear safety glasses for chemical substances
Provide an emergency eye wash facilities and a washing device near a chemical handling areas |
| ◦ Hand protection | Wear safety gloves when handling the chemical substances in accordance with the Chemical Substances Control Act |
| ◦ Skin and body protection | Wear chemical protective clothing 3 or 4 (full body) according to the Chemical Substance Control Law when handling. |

Section 9 – PHYSICAL AND CHEMICAL PROPERTIES

1. Physical state and color	Liquid(Colorless and transparent)	2. Odor	Mint and Sweet odor
3. threshold	20ppm	4. pH	N/A
5. Melting/Freezing point	-86°C	6. Boiling point/range	80°C
7. Flashing point	-9°C	8. Evaporation speed	2.7(ether=1)
9. Flammability(solid, gas)	Non-described	10. Flash or Explosion limit upper / lower	11.5% / 1.8%
11. Vapor pressure	105mbar@20°C	12. Solubility	26.8%@20°C
13. Vapor density	2.7	14. Gravity	0.8
15. n-octanol-water Partition coefficient	0.29	16. Self ignition temp(°C)	405°C
17. Cracking temp(°C)	N/A	18. Viscosity	0.42mPa s@15°C
19. Molecular Weight	72.11		

Section 10 – STABILITY AND REACTIVITY

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| 1. Chemical stability and Possibility of Hazardous Reactions | Stable under normal temp. and pressure |
| 2. Conditions to Avoid | Avoid heat, sparks, flames, static electricity and other sources of ignition. |
| 3. Incompatible Materials | Halocarbon compounds, acids, combustible materials, oxidants, peroxides, bases, etc. |
| 4. Hazardous Decomposition Products | Carbon oxides, hydrocarbon gases, etc. |

Section 11 – TOXICOLOGICAL INFORMATION

1. Information on the likely routes of exposure.

N/A

2. Health hazard information

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| ◦ Acute toxic | Oral : LD50 2737 mg/kg Rat
Skin : LD50 6480 mg/kg Rabbit
Inhalation : Vapors LC50 32 mg/l 4 hr Mouse |
| ◦ Serious skin corrosive / irritation | Skin irritation test results using rabbit: medium irritant |
| ◦ Serious eye damage / irritation | Irritating to eyes and causing corneal damage |
| ◦ Respiratory sensitization | N/A |
| ◦ Skin sensitization | N/A |
| ◦ Carcinogenicity | N/A |
| ◦ Germ cell Mutagenicity | Results of micronucleus test using mammalian red blood cells: negative |
| ◦ Reproductive toxic | Inhalation exposure in rats showed fetal bone delay and mutation but not malformed |
| ◦ Specific target organ toxicity (single exposure) | May cause respiratory irritation, drowsiness and dizziness. |
| ◦ Specific target organ toxicity (repeated exposure) | A numbness of the hands and arms appears in a person.
CNS disorders appear. |
| ◦ Aspiration hazard | N/A |

Section 12 – ECOLOGICAL INFORMATION

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| 1. Aquatic and Terrestrial eco toxicity | Fish toxicity : LC50 3220 mg/l 96 hr Pimephales promelas
Invertebrate toxicity : EC50 5091 mg/l 48 hr Daphnia magna
Sea algae : EC50 > 500 mg/l 96 hr Skeletonema costatum |
| 2. Persistence and degradability | Persistence : log kow 0.29
Degradability : N/A |
| 3. Bioaccumulative potential | Concentrations : N/A
Bioaccumulative : 89 (%) 20 day |
| 4. Mobility in soil | N/A |
| 5. Other adverse effects | N/A |

Section 13 – Disposable considerations

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| 1. Waste methods | Dispose in accordance with local regulations. |
| 2. Waste warning | Dispose prohibited substances and waste separately from others. |

Section 14 – TRANSPORT INFORMATION

1. UN No.	1193
2. Proper shipping Name	Ethyl methyl keone
3. Hazard class	3
4. Packing group	II
5. Marine pollutant	Non-described
6. Particular safety Measures for transportation	Fire emergency : F-E Emergency measures RELEASE : S-D

Section 15 – REGULATORY INFORMATION

1. Occupation safety and health acts	Standard material of exposure Test material of working environment (Test period; 6months) Hazardous material of administration objective Special diagnosis material of health (Diagnosis period; 12months) Process Safety Management report submitted substance
2. Chemical Substances Control Act	Toxicity, Safety material for Accident
3. National law of Safety management of hazardous material	4 Class 1 Petroleum(Water-insoluble liquid 200L)
4. National law of management of Wastes	Designated Waste, Toxicity waste
5. Other domestic and foreign law	EU classification information (confirmed classification result): F; R11 is Xi; R36 R66 R67 EU classification information (Risk phrases): R11, R36, R66, R67 EU classification information (Safety phrases): S2, S9, S16

Section 16 – OTHER INFORMATION

1. Material source	A chemical information MSDS Safety and Health Agency National Institute of Environmental Research Chemical Information Systems Korea Industrial Technology National Fire Hazardous Materials Information System
1. The 1 st edition	2002.07.30
2. Revision and The final revision	10 / 2019.06.13

. Other references

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