

Material Safety Data Sheets

1. IDENTIFICATION

Product Name	Methylethyl ketone (MEK)
Other Names	Methyl acetone
Uses	Solvent used in resins, surface coatings, wood coatings, adhesives, thinners, paints, printing inks and cleaning agents. Industrial use in lubricating oil.
Chemical Family	No Data Available
Chemical Formula	C ₄ H ₈ O
Chemical Name	2-Butanone
Product Description	No Data Available
Company	Arman sina.co
Contact Information	info@armansina.com www.armansina.com

2. HAZARD IDENTIFICATION

Globally Harmonised System

Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Hazard Categories	Flammable Liquids - Category 2 Serious Eye Damage/Irritation - Category 2 Specific Target Organ Toxicity (Single Exposure) - Category 3

Pictograms



Signal Word	Danger
-------------	--------

Hazard Statements		AUH066	Repeated exposure may cause skin dryness or cracking
		H225	Highly flammable liquid and vapour.
		H319	Causes serious eye irritation.
		H336	May cause drowsiness or dizziness.
Precautionary Statements	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 and all other equipment.
		P242	Use non-sparking tools.
		P243	Take action to prevent static discharges.
		P261	Avoid breathing fumes/gas/mist/vapours/spray.
		P264	Wash contacted areas thoroughly after handling.
		P271	Use only outdoors or in a well-ventilated area.
		P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response	P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
	P304 + P340	IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P312	Call a POISON CENTER or doctor if you feel unwell.
	P337 + P313	If eye irritation persists: Get medical attention.
	P370 + P378	In case of fire: Use carbon dioxide (CO ₂), dry chemical or foam for extinction.
Storage	P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
	P403 + P235	Store in a well-ventilated place. Keep cool.
	P405	Store locked up.
Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
2-Butanone	C ₄ H ₈ O	78-93-3	>=99.7 - 100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then give a glass of water. Do not induce vomiting. Call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an unconscious person.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Remove and isolate contaminated clothing and shoes. Immediately flush skin with running water for at least 15 minutes. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse. *In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a Poison Centre or doctor/physician for advice. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Advice to Doctor	Immediate medical attention is required. Show this material safety data sheet (SDS) to the doctor in attendance. Treat symptomatically. Symptoms may be delayed. Keep victim calm and warm. Ensure that attending medical personnel are aware of identity and nature of product(s) involved, and take precautions to protect themselves.

Medical Conditions Aggravated by No information available.

Exposure

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool container with water spray until well after fire is out. Avoid getting water inside containers.
Flammability Conditions	HIGHLY FLAMMABLE LIQUID: Low flashpoint - Will be easily ignited by heat, sparks or flames at ambient temperatures.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO ₂), foam or water spray for extinction - Do not use water jets. Alcohol resistant foam is the preferred firefighting medium but, if it is not available, fine water spray can be used. *Caution: Use of water spray when fighting fire may be inefficient.
Fire and Explosion Hazard	Risk of violent reaction or explosion! Vapours will form explosive mixtures with air. Vapours will travel to source of ignition and flash back. Many vapours are heavier than air and will collect in low or confined areas. Vapours from runoff may create an explosion hazard. Containers may explode when heated. Fire exposed containers may vent contents through

	pressure relief valves, thereby increasing fire intensity and/or vapour concentration.
Hazardous Products of Combustion	Fire may produce irritating, toxic and/or corrosive gases, including oxides of Carbon.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways; Vapours from runoff may create an explosion hazard.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters protective clothing will provide thermal protection but provides only limited chemical protection.
Flash Point	-9 ° C [Closed cup]
Lower Explosion Limit	1.8 %
Upper Explosion Limit	11.5 %
Auto Ignition Temperature	505 ° C
Hazchem Code	•2YE

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flame). All equipment used in handling the product must be earthed. Do not touch or walk through spilled material - Slippery when spilt. Avoid accidents, clean up immediately! Avoid breathing vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Absorb spill with earth, sand or other non-combustible material. Use clean, non-sparking tools to collect material and place it in suitable, labelled containers for later disposal (see SECTION 13).
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. In case of large spillage, contain by bunding. A vapour-suppressing foam may be used to reduce vapours. Water spray may reduce vapour, but may not prevent ignition in closed spaces. *Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Decontamination	No information available.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses. If contamination of sewers or waterways has occurred advise local emergency services.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised/unprotected personnel away. Keep upwind and to higher ground.
Personal Precautionary Measures	Wear protective equipment to avoid skin and eye contact and breathing in vapours (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation - Use only outdoors or in a well-ventilated place. Handle in accordance with good industrial hygiene and safety practice. Avoid breathing mist/vapours and contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection (see SECTION 8). Keep away from heat, hot surfaces, sparks, open flames and other ignition sources - No smoking. Ground/bond container and receiving equipment. Use explosion-proof equipment and non-sparking tools. Take precautionary measures against static discharge. Do not use compressed air for filling, discharging or handling operations.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed - Check regularly for leaks. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Methyl ethyl ketone (CAS No. 78-93-3): - Safe Work Australia Exposure Standard: TWA = 150 ppm (445 mg/m³); STEL = 300 ppm (890 mg/m³). - New Zealand Workplace Exposure Standard: TWA = 150 ppm (445 mg/m³); STEL = 300 ppm (890 mg/m³); Exposure can also be estimated by biological monitoring (bio). - OSHA PEL/NIOSH REL: TWA = 200 ppm (590 mg/m³); STEL = 300 ppm (885 mg/m³). - Immediately dangerous to life or health (IDLH) concentration: 3,000 ppm.
Exposure Limits	No Data Available
Biological Limits	BEI values set by WorkSafe NZ: - Exposure: Methyl ethyl ketone (MEK) - Determinant: MEK in urine - Sampling time: End of shift - BEI: 2 mg/litre
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Use explosion-proof electrical/ventilating/lighting/equipment.
Personal Protection Equipment	- Respiratory protection: In case of inadequate ventilation or if an inhalation risk exists, wear respiratory protection. Recommended: Organic vapour/particulate respirator or air-supplied mask (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Tightly fitting safety goggles. - Hand protection: Wear protective gloves. Recommended: Impervious gloves (such as butyl rubber). - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Wear fire/flammable resistant/retardant clothing and antistatic boots.
Special Hazards Precautions	Vapour heavier than air - prevent concentration in hollows or sumps. Do not enter confined spaces where vapour may have collected.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Transparent liquid
Odour	Characteristic
Colour	Colourless
pH	No Data Available
Vapour Pressure	10.5 kPa (@ 20 ° C)
Relative Vapour Density	2.48 Air = 1
Boiling Point	79 ° C
Melting Point	No Data Available
Freezing Point	-87.3 ° C
Solubility	Partly miscible with water
Specific Gravity	0.805 - 0.807 (Water = 1)
Flash Point	-9 ° C [Closed cup]
Auto Ignition Temp	505 ° C
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available

Net Propellant Weight	No Data Available
Octanol Water Coefficient	0.29
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	Risk of violent reaction or explosion!
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	HIGHLY FLAMMABLE LIQUID: Low flashpoint - Will be easily ignited by heat, sparks or flames at ambient temperatures.
Reactions That Release Gases or Vapours	Fire may produce irritating, toxic and/or corrosive gases, including oxides of Carbon.
Release of Invisible Flammable Vapours and Gases	Vapours will form explosive mixtures with air.

10. STABILITY AND REACTIVITY

General Information	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical Stability	Stable under proper operation and storage conditions.
Conditions to Avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
Materials to Avoid	Incompatible/reactive with oxidants, chloroform, bromoform and other organic solvents; Alkali, sodium, calcium and other active metal, halogen, metal oxide, non-metal oxide, acyl halide and metal phosphide.
Hazardous Decomposition Products	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Fire may produce irritating, toxic and/or corrosive gases, including oxides of Carbon.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	- Acute toxicity: May be harmful if swallowed and if inhaled. Swallowing can result in nausea, vomiting and central nervous system depression. - Skin corrosion/irritation: May cause skin irritation. Will have a degreasing action on the skin. Repeated exposure may cause skin dryness or cracking. - Eye damage/irritation: Causes serious eye irritation, redness, pain. - Respiratory/skin sensitisation: Not found to induce dermal sensitisation (Guinea pigs) [OECD Test Guideline 406]. - Germ cell mutagenicity: Not expected to be genotoxic. - Carcinogenicity: No information available. - Reproductive toxicity: No information available. - STOT (single exposure): May cause drowsiness or dizziness. Material may be irritant to the mucous membranes of the respiratory tract (airways). Breathing in high concentrations can produce central nervous system depression, which can
----------------------------	---

lead to loss of co-ordination, impaired judgement and if exposure is prolonged, unconsciousness.
- STOT (repeated exposure): No information available.
- Aspiration toxicity: No information available.

Acute

Ingestion	Acute toxicity (Oral): - LD50, Rat: 2,737 mg/kg [Supplier's SDS].
Inhalation	Acute toxicity (Inhalation): - LC50, Mouse: 32 mg/L (4 h) [Supplier's SDS].
Other	Acute toxicity (Dermal): - LD50, Rabbit: 6,480 mg/kg [Supplier's SDS].
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish: 3,220 mg/L (96 h). - EC50, Crustacea: 5,090 mg/L (48 h). - ErC50, Algae: >1,200 mg/L (72 h).
Persistence/Degradability	No information available.
Mobility	No information available.
Environmental Fate	Prevent entry into drains and waterways.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations. Incineration disposal is recommended.
Special Precautions for Land Fill	Containers may still present chemical hazard when empty. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Recycle, if possible.

14. TRANSPORT INFORMATION

Land Transport

Proper Shipping Name	ETHYL METHYL KETONE (METHYL ETHYL KETONE)
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
EPG	14 Liquids - Highly Flammable
UN Number	1193
Hazchem	•2YE
Pack Group	II
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	ETHYL METHYL KETONE (METHYL ETHYL KETONE)
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
UN Number	1193
Hazchem	2YE
Pack Group	II
Special Provision	No Data Available
EMS	F-E, S-D
Marine Pollutant	No

Air Transport

IATA DGR

Proper Shipping Name	ETHYL METHYL KETONE (METHYL ETHYL KETONE)
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
UN Number	1193
Hazchem	2YE
Pack Group	II
Special Provision	No Data Available

15. OTHER INFORMATION

Revision	2
Key/Legend	< Less Than > Greater Than AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² Square Centimetres CO₂ Carbon Dioxide COD Chemical Oxygen Demand deg C (° C) Degrees Celcius deg F (° F) Degrees Farenheit g Grams g/cm³ Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluable in each other. inHg Inch of Mercury inH₂O Inch of Water K Kelvin kg Kilogram kg/m³ Kilograms per Cubic Metre lb Pound LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours. LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals. ltr or L Litre m³ Cubic Metre mbar Millibar mg Milligram mg/24H Milligrams per 24 Hours mg/kg Milligrams per Kilogram mg/m³ Milligrams per Cubic Metre Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present. mm Millimetre mmH₂O Millimetres of Water mPa.s Millipascals per Second N/A Not Applicable NIOSH National Institute for Occupational Safety and Health NOHSC National Occupational Heath and Safety Commission OECD Organisation for Economic Co-operation and Development Oz Ounce PEL Permissible Exposure Limit Pa Pascal ppb Parts per Billion ppm Parts per Million ppm/2h Parts per Million per 2 Hours ppm/6h Parts per Million per 6 Hours psi Pounds per Square Inch R Rankine RCP Reciprocal Calculation Procedure STEL Short Term Exposure Limit TLV Threshold Limit Value tne Tonne TWA Time Weighted Average ug/24H Micrograms per 24 Hours UN United Nations wt Weight