

MATERIAL SAFETY DATA SHEET INFORMATION

For further information: Please refer to the Material Safety Data Sheet following

Issue: July 08

PRODUCT: METHYL ETHYL KETONE (M.E.K.)

Other Names: Ethyl Methyl Ketone, MEK, 2-Butanone

Uses: Coatings formulations, laboratory reagent, cleaning formulations

UN No.:	1193
Dangerous Goods Class:	3
Subsidiary Risk:	None
Packing Group:	II
Hazchem Code:	● 2YE
Poisons Schedule:	5

Hazardous Nature:	This product is classified as hazardous according to Australian Safety and Compensation Council criteria.
Exposure Standards:	TWA: 445 mg/m ³ (150 ppm); STEL: 890 mg/m ³ (300 ppm); Peak Limitation (if any): None; Skin Sensitiser (if any): none. Refer to Section 8 for further information and definitions.

Physical Characteristics (Typical)	Section 9 of the MSDS
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Appearance	Clear, colourless, mobile liquid
Boiling Point/Range (°C):	78 – 81
Flash Point (°C):	-4
Specific Gravity/Density (g/ml @ 15°C):	0.805
pH:	No data available
Chemical Stability:	This product is stable at room temperature and pressure.
Reactivity:	Excessive heat, mineral acids, strong oxidisers, halogenated compounds

Product Ingredients	Section 3 of the MSDS
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<u>Ingredient</u>	<u>CAS Number</u>	<u>Proportion</u>
Methyl Ethyl Ketone	78-93-3	100

For further ingredients information, please refer to the full MSDS

Risk Phrases	Section 2 of the MSDS
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R 11: Highly Flammable
R 36: Irritating to eyes
R 66: Repeated exposure may cause skin dryness or cracking
R 67: Vapours may cause drowsiness or dizziness

DEFINITIONS

Dangerous Goods	Products that are regulated for transport by Road and Rail under the national guide are Dangerous Goods. Products can be classed as Dangerous Goods if they have a flash point below 60.5°C, a pH below 3 or above 11, are explosives or toxic. These goods will be allocated a UN No., Packing Group, Hazchem Code, and possibly a subsidiary risk.
Hazardous Substances	Hazardous Substances are those products that are intrinsically hazardous by nature, rather than by misuse. These include mutagens, teratogens, carcinogens, products that are toxic (but not sufficiently toxic to be classed as Dangerous Goods or carry a subsidiary risk), and products that pose environmental risks.
Poisons	Poisons are products that are regulated by the dose or exposure, often having physical and chemical effects at certain concentrations particular to the nature of the product. For example, in small doses, some products are harmless, but with increased concentration or exposure these products can be extremely harmful. The classification indicates First Aid, etc.

1. IDENTIFICATION

Product Name: METHYL ETHYL KETONE (M.E.K.)
Other Names: Ethyl Methyl Ketone, MEK, 2-Butanone
Chemical Family: Ketone
Molecular Formula: CH₃CH₂CH₂CO
Recommended Use: Coatings formulations, laboratory reagent, cleaning formulations
Supplier: Univar Australia Pty Ltd
ABN: 99 114 669 091
Address: 14 Williamson Road, Ingleburn NSW 2565
Telephone: +61 2 9618 1588
Fax: +61 2 9618 1505
Emergency Phone: **CHEMCALL: 1800 127 406**
All other inquiries: (02) 9618 1588

2. HAZARDS IDENTIFICATION

Hazard Classification

This product is classified as hazardous according to Australian Safety and Compensation Council criteria.

Hazard Category

F: Flammable; Xi: Irritant

Risk Phrases

R 11: Highly Flammable

R 36: Irritating to eyes

R 66: Repeated exposure may cause skin dryness or cracking

R 67: Vapours may cause drowsiness or dizziness

Safety Phrases

S 2: Keep out of the reach of children

S 9: Keep container in a well-ventilated place

S 16: Keep away from sources of ignition

Dangerous Goods Classification 3

Poisons Schedule 5

3. COMPOSITION: Information on Ingredients

Chemical Ingredient	CAS Number	Proportion (% v/v)
Methyl Ethyl Ketone	78-93-3	100

4. FIRST AID MEASURES

For advice, contact Poisons Information Centre (Phone Australia: 13 1126) or a doctor.

Ingestion

If swallowed, DO NOT induce vomiting. Keep at rest. Seek immediate medical attention.

Eye Contact

Flush eyes with large amounts of water until irritation subsides. Seek immediate medical attention.

Skin Contact

Flush area with large amounts of water and wash area with soap if available. Remove contaminated clothing, including shoes, and launder before reuse. Seek medical attention for skin irritations.

Inhalation

Using proper respiratory protection, immediately remove the affective victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Seek immediate medical attention.

First Aid Facilities

Provide eye baths and safety showers.

Medical Attention

Treat according to symptoms. Avoid gastric lavage - aspiration of product to the lungs may result in chemical pneumonitis.

5. FIRE FIGHTING MEASURES

Shut off product that may 'fuel' a fire if safe to do so. Allow trained personnel to attend a fire in progress providing fire fighters with this Material Safety Data Sheet. Prevent extinguishing media from escaping to drains and waterways.

Suitable Extinguishing Media

Alcohol resistant foam, or if unavailable, water spray

Hazards from combustion products

Carbon dioxide and carbon monoxide

Precautions for fire fighters and special protective equipment

Full protective clothing and self-contained breathing apparatus

Hazchem Code

- 2YE

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures

Prevent product from escaping to drains and waterways. Contain leaking packaging in a containment drum. Prevent vapours or dusts from building up in confined areas. Ensure that drain valves are closed at all times. Clean up and report spills immediately.

Methods and materials for containment

Major Land Spill

- Eliminate sources of ignition.
- Warn occupants of downwind areas of possible fire and explosion hazard, where present.
- Prevent product from entering sewers, watercourses, or low-lying areas.
- Keep the public away from the area.
- Shut off the source of the spill if possible and safe to do so.
- Advise authorities if substance has entered a watercourse or sewer or has contaminated soil or vegetation.
- Take measures to minimise the effect on the ground water.
- Contain the spilled product using the resources in the spill kit.
- Recover by pumping – use explosion proof pump or hand pump – or with a suitable absorbent material.
- Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.
- See "First Aid Measures" and "Stability and Reactivity"

Major Water Spill

- Eliminate any sources of ignition.
- Warn occupants and shipping in downwind areas of possible fire and explosion hazard, where present.
- Notify the port or relevant authority and keep the public away from the area.
- Shut off the source of the spill if possible and safe to do so.
- Confine the spill if possible.

- Remove the product from the surface by skimming or with suitable absorbent material.
- Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.
- See “First Aid Measures” and “Stability and Reactivity”.

7. HANDLING AND STORAGE

Precautions for Safe Handling

This product is flammable. Do not open near open flame, sources of heat or ignition. No smoking. Keep container closed. Handle containers with care. Open slowly to control possible pressure release. Use grounding leads to avoid discharge (electrical

Conditions for Safe Storage

Store in a cool, dry place away from direct sunlight. Do not pressurise, cut, heat or weld containers - residual vapours are flammable. This product is flammable and will fuel a fire in progress.

Incompatible Materials

Natural Rubber, Butyl Rubber, EPDM, Polystyrene

8. EXPOSURE CONTROLS: PERSONAL PROTECTION

National Exposure Standards

The time weighted average concentration (TWA) for this product is: 445 mg/m³ (150 ppm), which means the highest allowable exposure concentration in an eight-hour day for a five-day working week. The short term exposure limit (STEL) is: 890 mg/m³ (300 ppm), which is the maximum allowable exposure concentration at any time. Replacing a TWA or STEL value for some products is a Peak Limitation value (Peak): None applies in this case. In addition to the exposure concentrations may be a subsidiary caution in such cases where the product is a skin sensitiser, represented as (Sk), where none applies in this case.

Biological Limit Values (BLV)

No data available

Engineering Controls: Ventilation

The use of local exhaust ventilation is recommended to control process emissions near the source. Laboratory samples should be handled in a fume hood. Provide mechanical ventilation of confined spaces. Use explosion proof equipment.

Personal Protective Equipment

Respiratory Protection: Where concentrations in air may approach or exceed the limits described in the National Exposure Standards, it is recommended to use a half-face filter mask to protect from overexposure by inhalation. A type ‘A’ filter material is considered suitable for this product.

Eye Protection: Always use safety glasses or a face shield when handling this product.

Skin/Body Protection: Always wear long sleeves, long trousers, or coveralls, and enclosed footwear or safety boots when handling this product. It is recommended that chemical resistant gloves be worn when handling this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Unit of measurement	Typical Value
Appearance	None	Clear, colourless, mobile liquid
Boiling Point/Range	°C	78
Flash Point	°C	-4
SG/Density (@ 15°C)	g/ml; kgm ⁻³	0.805
Vapour Pressure @ 20°C	kPa	9.3
Vapour Density @ 20°C	g/ml; kgm ⁻³	> 1.00
Autoignition Temperature	°C	450

Property	Unit of measurement	Typical Value
Explosive Limits in Air	% vol/vol	1.8 – 11.5
Viscosity @ 20 °C	cPs, mPas	Not available
Percent volatiles	% vol/vol	100
Acidity/alkalinity as pH	None	No data available
Solubility in Water	g/l	Miscible with water
Other solvents	-	Alcohols, hydrocarbons, acetates

The values listed are indicative of this product's physical and chemical properties. For a full product specification, please consult the Technical Data Sheet.

10. STABILITY AND REACTIVITY

Chemical stability

This product is stable at room temperature and pressure.

Conditions to avoid

Excessive heat, mineral acids, strong oxidisers, halogenated compounds

Hazardous decomposition products

Carbon dioxide, carbon monoxide and organic complexes on incomplete burning/oxidation

Hazardous reactions

Strong oxidising agents, mineral acids

Hazardous polymerisation

Will not occur

11. TOXICOLOGICAL INFORMATION

Acute Effects

Ingestion

This material will cause irritation to the throat, trachea and respiratory tract. It may cause nausea. Swallowing large amounts will have a narcotic effect: headaches, dizziness, euphoria, loss of appetite and possibly loss of consciousness. Vomiting may cause the product to be aspirated to the lungs resulting in chemical pneumonitis.

Eye Contact

Liquid may cause moderate to severe eye irritation and corneal damage. Most subjects exposed to vapour concentrations of 150 - 300 ppm experience irritation to the eyes.

Skin Contact

Brief contact may cause mild irritation. Prolonged or repeated exposure may cause defatting resulting in dryness or cracking of the skin (irritant contact dermatitis). Due to its low toxicity and high volatility, this product is unlikely to be absorbed through the skin in harmful amounts unless evaporation is prevented.

Inhalation

Vapour concentrations above 150 ppm are irritating to the nose and throat. High vapour concentrations (above 300 ppm) result in narcotic effects including possible headaches, dizziness, loss of coordination, nausea, loss of appetite and possibly loss of consciousness.

Chronic Effects

This product is an experimental teratogen and affects the peripheral nervous system (arms and legs). People with pre-existing liver or kidney dysfunction should limit exposure to this product.

Other Health Effects Information

The effects of this product in combination with n-hexane are potentiated (greatly increased). This means that the effects suffered by ingestion or inhalation will be increased, or experienced more quickly.

Toxicological Information

Oral LD₅₀: Oral: 2737 mg/kg (rat)

Dermal LD₅₀: Skin: 6480 mg/kg (rabbit)

12. ECOLOGICAL INFORMATION

Ecotoxicity

Aquatic Toxicity:

Fish Toxicity LC₅₀: Goldfish (LC50): 2400000 µg/L

Daphnia Magna EC₅₀: EC50: 2600000 µg/L

Blue-green algae: LOEC: 120000 µg/L

Green algae: LOEC: 4300000 µg/L

Persistence/Biodegradability: Log P: 0.29; pKa: 14.7

Mobility: This product is likely to be mobile on dilution with a potential to contaminate soil, ground water and grasslands. The product is highly volatile and readily biodegrades on exposure to air and light.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Empty packaging should be taken for recycling, recovery or disposal through a suitably qualified or licensed contractor. Care should be taken to ensure compliance with national and local authorities. Packaging may still contain product residue that may be harmful. Ensure that empty packaging is managed in accordance with Dangerous Goods regulations.

Special Precautions

This product is not suitable for disposal by either landfill or via municipal sewers, drains, natural streams or rivers. This product is ashless and can be incinerated in a regulated facility. In the absence of a designated industrial incinerator, this product should be treated and disposed through chemical waste treatment, or considered for use in solvent recycling.

14. TRANSPORT INFORMATION

Road and Rail Transport		Marine Transport		Air Transport	
UN No.	1193	UN No.	1193	UN No.	1193
Proper Shipping Name	Ethyl Methyl Ketone	Proper Shipping Name	Ethyl Methyl Ketone	Proper Shipping Name	Ethyl Methyl Ketone
DG Class	3	DG Class	3	DG Class	3
Sub. Risk	None	Sub. Risk	None	Sub. Risk	None
Packing Group	II	Packing Group	II	Packing Group	II
Hazchem	• 2YE	Hazchem	• 2YE	Hazchem	• 2YE

Dangerous Goods Segregation

This product is classified as Dangerous Goods Class 3, packing group II for Transport by Road and Rail.

15. REGULATORY INFORMATION

Country/Region: Australia

Inventory: AICS

Status: Listed

Poisons Schedule: 5

16. OTHER INFORMATION

Reasons for Issue: Upgrade to 16-point MSDS; Amalgamated supplier changes in all sections

Abbreviations:

AICS: Australian Inventory of Chemical Substances

CAS Number: Chemical Abstracts Number

IARC: International Agency for Research on Cancer

ASCC: Australian Safety and Compensation Council

PPE: Personal Protective Equipment

N/R: Non-regulated

N/A: Not applicable

References:

- Supplier Material Safety Data Sheets
- <http://hsis.ascc.gov.au/SearchHS.aspx> (July, 2008)
- Animal toxicology data: <http://chem.sis.nlm.nih.gov/chemidplus> (July, 2008)
- Ecotoxicology data: http://cfpub.epa.gov/ecotox/quick_query.htm (July, 2008)
- *Sax's Dangerous Properties of Industrial Materials*, Richard J Lewis Snr., pub. Canada (2005)

The information sourced for the preparation of this document was correct and complete at the time of writing to the best of the writer's knowledge. The document represents the commitment to the company's responsibilities surrounding the supply of this product, undertaken in good faith. This document should be taken as a safety guide for the product and its recommended uses, but is in no way an absolute authority. Please consult the relevant legislation and regulations governing the use and storage of this type of product. For further information, please contact Univar Australia Pty Ltd.
