

1. IDENTIFICATION

Product Name	Methyl Isobutyl Ketone
Other Names	2-Methyl-4-pentanone; 2-Methylpropyl methyl ketone; 2-Pentanone, 4-methyl-; 4-Methyl-2-oxopentane; 4-Methyl-2-pentanone; Hexone; Isopropyl Acetone; Methylisobutyl ketone; MIBK; MIK
Uses	Industrial solvent.
Chemical Family	No Data Available
Chemical Formula	(CH ₃) ₂ CHCH ₂ COCH ₃
Chemical Name	Methyl Isobutyl Ketone
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	2132A E. Dominguez Street Carson CA 90810 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapid 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) 5

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 Acute Toxicity (Inhalation) - Category 4 Skin Corrosion/Irritation - Category 3 Carcinogenicity - Category 2 Specific Target Organ Toxicity (Single Exposure) - Category 3



Pictograms



Signal Word

Danger

Hazard Statements

- H225** Highly flammable liquid and vapour.
- H316** Causes mild skin irritation.
- H332** Harmful if inhaled.
- H335** May cause respiratory irritation.
- H336** May cause drowsiness or dizziness.
- H351** Suspected of causing cancer.

Precautionary Statements

Prevention

- P201** Obtain special instructions before use.
- 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.
- P261** Avoid breathing fumes/gas/mist/vapours/spray.
- P264** Wash face, hands and any exposed skin thoroughly after handling.
- P271** Use only outdoors or in a well-ventilated area.
- P280** Wear protective gloves/protective clothing/eye protection/face protection.
- P281** Use personal protective equipment as required.

Response

- P303 + P361 + P353** IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304 + P340** IF INHALED: Remove victim to fresh air and keep at rest in a position 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.
- P308 + P313** IF exposed or concerned: Get medical advice/ attention.
- P312** Call a POISON CENTER or doctor/physician if you feel unwell.
- P337 + P313** If eye irritation persists: Get medical advice/attention.
- P370 + P378** In case of fire: Use carbon dioxide (CO₂), dry chemical, regular foam extinguishing agent or water spray 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.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification

Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION/INFORMATION ON INGREDIENTS



Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Methyl Isobutyl Ketone	No Data Available	108-10-1	99.0 %
Water	No Data Available	7732-18-5	<1.0 %
2-Methyl-2-pentanone	No Data Available	108-11-2	<0.5 %

4. FIRST AID MEASURES**Description of necessary measures according to routes of exposure**

Swallowed	If swallowed, DO NOT induce vomiting. Keep at rest. Seek immediate medical attention.
Eye	Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Take care not to rinse contaminated water into the non-affected eye. Seek immediate medical attention.
Skin	If skin or hair contact occurs, immediately remove any contaminated clothing and flush skin and hair with running water. If redness, swelling, blistering or irritation occurs, seek medical advice. For skin burns, flood burnt area with plenty of water and cover with a clean, dry dressing. Seek immediate medical attention.
Inhaled	Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Seek immediate medical attention.
Advice to Doctor	Treat according to symptoms. Avoid gastric lavage: risk of aspiration of product to the lungs with the potential to cause chemical pneumonitis.
Medical Conditions Aggravated by Exposure	No information available on medical conditions aggravated by exposure to this product.

5. FIRE FIGHTING MEASURES

General Measures	Flame-proof equipment is necessary in all areas where this chemical is being used. Nearby equipment must be earthed.
Flammability Conditions	Highly Flammable Liquid!
Extinguishing Media	In case of fire, use appropriate extinguishing media most suitable for surrounding fire conditions. Use chemical powder, carbon dioxide, water fog, alcohol-resistant foam. Keep containers cool with water spray. If safe to do so, remove containers from path of fire. If the spill cannot be stopped and there is no immediate danger in the surrounding area, allow it to burn away. If the spill is not stopped before extinguishing the fire, the vapor and the air will form an explosive mixture and ignite afterwards. Isolate the unignited substances and protect all personnel. Remove the containers from the fire site under safe conditions. Use water fog to cool the tanks and containers in the fire site. 8. Using water fog to extinguish fire may be ineffective unless executed by fire fighters trained for extinguishing flammable liquids. If the spill is not burning, spray water fog to disperse the vapor and protect the personnel attempting to contain the spill. Using spout to extinguish fire is useless. For large fires in a big area, use unmanned water mist stand or the automatic water fire monitor. Evacuate from the fire site as fast as possible and allow the fire to burn out. Stay far away from the storage tanks. Evacuate immediately if the safety valve alarm is on or changes color due to the fire. Personnel not wearing special protection gears will not be allowed to enter. Water fog is normally not used to extinguish fire but may be used to cool fire-exposed containers.
Fire and Explosion Hazard	May form flammable mixtures with air. Vapours are heavier than air and may travel to an ignition source and flash back. Vapour can spread along the ground and collect in low or confined areas. Vapour may cause flash fire. May be ignited by heat, sparks or flame. May polymerise explosively when involved in a fire. Heating can cause expansion or decomposition of the material, which can lead to the containers exploding. Oxidizers (such as peroxides, nitrates and perchlorates), reducing agent and potassium t-butoxide will induce violent reaction.
Hazardous Products of Combustion	Carbon dioxide and carbon monoxide
Special Fire Fighting Instructions	Hazchem Code: •3YE. Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
Personal Protective Equipment	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit.
Flash Point	18 °C Abel
Lower Explosion Limit	1.2 %
Upper Explosion Limit	8.0 %



Auto Ignition Temperature 448 °C
Hazchem Code •3YE

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Shut off all possible sources of ignition. Avoid accidents, clean up immediately. Increase ventilation. Avoid walking through spilled product as it is slippery when spilt. Do not breathe vapours, aerosols. Avoid substance contact. Make sure the cleaning work is performed by trained personnel.
Clean Up Procedures	<p>Major Land Spill Eliminate sources of ignition. Warn occupants of downwind areas of possible fire and explosion hazard. Prevent liquid 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 liquid with sand or earth. 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”</p> <p>Major Land Spill Eliminate sources of ignition. Warn occupants of downwind areas of possible fire and explosion hazard. Prevent liquid 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 liquid with sand or earth. 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” 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”.</p>
Containment	Stop leak if safe to do so.
Environmental Precautionary Measures	Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management. Use clean, non-sparking tools and equipment.
Evacuation Criteria	Evacuate all unnecessary personnel.
Personal Precautionary Measures	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling	Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. Avoid prolonged or repeated exposure. Operations should be carried out in an efficient fume hood or equivalent system. Remove contaminated clothing and wash before reuse. Keep away from open flames, hot surfaces and sources of ignition. Handling temperatures: Ambient. Do not inhale substance. Avoid generation of vapours/aerosols.
Storage	Store in a cool, dry, well-ventilated, fire-proof area. Keep containers tightly sealed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Ground and bond storage containers. Store away from incompatible materials as listed in section 10. Keep away from heat and sources of ignition. This product has a UN Classification of 1245 and a Dangerous Goods Class 3 (flammable) according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.
Container	Container type/package must comply with all applicable local legislation. Store in original packaging as approved by manufacturer. Incompatible materials Natural Rubber, Butyl Rubber, EPDM, Polystyrene



8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No exposure standard has been established for this product by the Safe Work Australia (SWA). Methyl isobutyl ketone CAS 108-10-1: TWA = 50ppm (205mg/m ³) STEL = 75ppm (307mg/m ³) NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.
Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
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 a flame proof/explosion proof exhaust ventilation system.
Personal Protection Equipment	RESPIRATOR: Below 500ppm:Chemical filter cartridge type breathing apparatus with organic vapor filter cartridge, supplied air type breathing apparatus or air respirator (self-contained breathing apparatus). Unknown concentration: Positive-pressure self-contained breathing apparatus, positive-pressure full air-supply respiratory apparatus with positive-pressure self-contained respiratory apparatus. Escape: (a) Full front and back gas mask with air purifying and organic vapor absorption function. (b) Any type of respirator for escaping (AS1715/1716). EYES: Safety glasses, Do not wear contact lens when using safety goggles or face masks (AS1336/1337). HANDS: Impermeable gloves made from Responder, Teflon, 4H and Tychem 10000 are preferable; however, prolonged use is not recommended. Wash properly and dry after use (AS2161). CLOTHING: Wear flame retardant antistatic protective clothing and anti-static footwear (AS3765/2210).
Work Hygienic Practices	Polluted clothes should be removed as soon as the work is completed. The clothes should be worn or discarded only after being washed. The washing staff should be informed of the harmful effects of the pollution. Eating, drinking, and smoking are strictly prohibited in the work area. Wash hands thoroughly after handling the substance. Keep the work area clean.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Camphor, thick sweet odour
Colour	Clear colourless
pH	No Data Available
Vapour Pressure	26.4 hPa (@ 25 °C)
Relative Vapour Density	3.5 Air = 1
Boiling Point	116.5 °C
Melting Point	-84 °C
Freezing Point	No Data Available
Solubility	miscible with Ethanol Diethyl ether Acetone Benzene soluble in Chloroform
Specific Gravity	0.800 g/cm ³
Flash Point	18 °C Abel
Auto Ignition Temp	448 °C
Evaporation Rate	5.6 Ether =1
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	0.8 g/ml
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available



Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	1.9 (measured)
Saturated Vapour Concentration	No Data Available
Vapour Temperature	20 °C
Viscosity	0.545 mPa*s (@ 25 °C)
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No Data Available
Potential for Dust Explosion	Product is a flammable liquid.
Fast or Intensely Burning Characteristics	No Data Available
Flame Propagation or Burning Rate of Solid Materials	No Data Available
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No Data Available
Properties That May Initiate or Contribute to Fire Intensity	No Data Available
Reactions That Release Gases or Vapours	No Data Available
Release of Invisible Flammable Vapours and Gases	No Data Available

10. STABILITY AND REACTIVITY

General Information	Highly Flammable Liquid.
Chemical Stability	Stable at room temperature and pressure.
Conditions to Avoid	Avoid contact with heat, sparks, open flame, and static discharge. Avoid any source of ignition.
Materials to Avoid	Strong oxidizing agents, peroxides, ozone.
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide and other organic complexes on incomplete burning or oxidation.
Hazardous Polymerisation	Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

General Information	Inhaled LC50 (4h): > 8.2 - < 16.4 mg/l Dermal LD50: > 2000 mg/kg
	MIBK is listed as an IARC 2B, possible human carcinogen based on animal data.
EyeIrritant	May cause eye irritation. Symptoms of exposure may include: Eye irritation, burning sensation, pain, watering, and/or change of vision.
Ingestion	Symptoms of exposure may include: Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhoea. Central nervous system depression with nausea, dizziness, headache, stupor, uncoordinated or strange behaviour, or unconsciousness.
Inhalation	May cause irritation of respiratory tract. Symptoms of exposure may include: Nasal discharge, hoarseness, coughing, chest pain and breathing difficulty. Central nervous system depression with nausea, dizziness, headache, stupor, uncoordinated or strange behavior or unconsciousness.
SkinIrritant	Prolonged or repeated contact may dry skin and cause irritation. Symptoms of overexposure include: Drying, cracking or inflammation of skin.
Carcinogen Category	No Data Available



12. ECOLOGICAL INFORMATION

Ecotoxicity	Acute fish toxicity : LC50: > 179 mg/l (96h) Species: Danio rerio (Zebra fish) Method OECD 203 Acute daphnia toxicity : EC50: > 200 mg/l (48h) Species: Daphnia magna Method OECD 202 Method OECD 211 Toxicity to bacteria : EC50 (16h): 275 mg/l Species: Pseudomonas putida Method DIN 38412 T.8
Persistence/Degradability	Readily biodegradable 83 % (28d) OECD 301 F
Mobility	This product is soluble in water and therefore highly mobile on dilution risking contamination of soil, waterways, grasslands, and groundwater.
Environmental Fate	Do NOT allow product to enter waterways, drains and sewers. Released in water, this material may evaporate, decompose by photolysis, bioaccumulation inside organic organisms in the water, or adsorb to dirt and settle. When released to air, this material is expected to be readily decomposed by photolysis or react with free hydroxyl radicals. Half-life (air): 4.6 ~ 468 hrs Half-life (water surface): 24 ~ 336 hrs Half-life (underground water): 48 ~ 168 hrs Half-life (soil): 45.5 ~ 168024 hrs
Bioaccumulation Potential	Bio-concentration factor (BCF): 2-5. This material will transform into other substances and not accumulate inside the body.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility. For small amounts, absorb using paper napkin and burn in approved solvent incinerator. For large amounts, collect and then dispose using specified incinerating method.
Special Precautions for Land Fill	Contact a specialist disposal company or the local waste regulator for advice.

14. TRANSPORT INFORMATION**Land Transport (Australia)**

ADG Code

Proper Shipping Name	METHYL ISOBUTYL KETONE
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
EPG	14 Liquids - Highly Flammable
UN Number	1245
Hazchem	•3YE
Pack Group	II
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	METHYL ISOBUTYL KETONE
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
UN Number	1245



Hazchem	3YE
Pack Group	II
Special Provision	No Data Available
EMS	F-E,S
Marine Pollutant	No

Air Transport

IATA

Proper Shipping Name	METHYL ISOBUTYL KETONE
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
UN Number	1245
Hazchem	3YE
Pack Group	II
Special Provision	No Data Available

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	5

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	203-550-1
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined



Taiwan (NCSR) Not Determined

USA (TSCA) Listed

16. OTHER INFORMATION

Related Product Codes	MEISBU0900, MEISBU1000, MEISBU1001, MEISBU1002, MEISBU1003, MEISBU1004, MEISBU1005, MEISBU1006, MEISBU1007, MEISBU1008, MEISBU1009, MEISBU1010, MEISBU1011, MEISBU1012, MEISBU1013, MEISBU1014, MEISBU1015, MEISBU1016, MEISBU1017, MEISBU1018, MEISBU1019, MEISBU1020, MEISBU1800, MEISBU1900, MEISBU2000, MEISBU2001, MEISBU2002, MEISBU2100, MEISBU2101, MEISBU2200, MEISBU2201, MEISBU2202, MEISBU2300, MEISBU2400, MEISBU3000, MEISBU4000, MEISBU4001, MEISBU1801, MEISBU1802, MEISBU1803, MEISBU1804, MEISBU4100, MEISBU3010, MEISBU3025, MEISBU3024, MEISBU3026, MEISBU3020, MEISBU3023, MEISBU3022, MEISBU3021, MEISBU3030, MEISBU3027, MEISBU0905, MEISBU3500, MEISBU5000, MEISBU5005, MEISBU4200, MEISBU4205
Revision	4
Revision Date	09 Nov 2015
Reason for Issue	SDS Updated
Key/Legend	<p>< 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 EPA (New Zealand) Environmental Protection Authority of New Zealand 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 insoluble 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 Health 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</p>



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

