



5515 North Service Rd. #306
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megaloid.ca



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RDC
Responsible Distribution Canada
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1. IDENTIFICATION

Name: *Methyl Ethyl Ketone*

Synonyms: *MEK; 2-butanone; methyl acetone; ethyl methyl ketone*

Product Uses: *Solvent in paints & coatings*

Supplier: *Megaloid Laboratories Limited*
Identifier: *5515 North Service Road # 306
Burlington, ON L7L 6G4*

EMERGENCY INFORMATION: *Call CHEMTREC - (800) 424-9300
(CCN# 693764)*

2. HAZARD IDENTIFICATION

GHS Class <i>(category)</i>	Flammable <i>(2)</i>	Acute toxic <i>(4)</i>	Eye irritant <i>(2A)</i>	STOT <i>(3)</i>
Signal Word	DANGER			
Hazard Statements	<i>highly flammable liquid & vapour (H225)</i>	<i>Harmful if swallowed (H302)</i>	<i>Causes serious eye irritation (H319)</i>	<i>May cause dizziness or drowsiness (H336)</i>

Hazardous Pictograms



GHS Precautionary Statements for Labelling

Prevention

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.

P233	Keep container tightly closed.
P240	Ground or bond container and receiving equipment.
P241	Use explosion-proof electrical, ventilating and lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing vapours.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear eye protection, protective gloves and clothing of butyl rubber
Response	
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 person to fresh air and keep comfortable for breathing.
P305, P351, P338	IF IN EYES: rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P370, P378	IN CASE OF FIRE: use alcohol-resistant foam to extinguish.
Storage	
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
Disposal	
P501	Dispose of contents and container in accordance with local, regional, national and international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	CAS No.	%	Other Identifiers
<i>Methyl Ethyl Ketone</i>	78-93-3	100	EC # 201-159-0

4. FIRST-AID MEASURES

Inhalation

Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.

Skin Contact

Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.

Eye Contact

Wash eyes with plenty of water, holding eyelids open. Seek medical assistance if there is any irritation.

Ingestion

Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Most important symptoms and effects, both acute and delayed

If material enters lungs, symptoms may include coughing, choking, difficulty in breathing, chest congestion, and/or fever.

Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death.

Notes to physician

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

First-aid Comments

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water.

Unsuitable Extinguishing Media

Straight streams of water. Water jet spreads flames

Specific Hazards Arising from the Product

The vapour is heavier than air, spreads along the ground and distant ignition is possible. Carbon monoxide may be evolved if incomplete combustion occurs.

Special Protective Equipment and Precautions for Fire-fighters

Firefighters must wear SCBA. Fire-fighters may enter the area if positive pressure SCBA and full Bunker Gear is worn.

Static Charge Accumulation

Cannot accumulate a static charge on agitation or pumping

Combustion Products

Carbon monoxide, nitrogen oxides, smoke, part oxidized hydrocarbon fragments

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Eliminate all ignition sources. Use grounded, explosion-proof equipment. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Workers involved in spill clean-up must wear respirators with organic vapour cartridge; use a fresh cartridge every time.

Environmental Precautions

It is good practice to prevent releases into the environment. Do not allow into any sewer, on the ground or into any waterway. If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.

Methods and Materials for Containment and Cleaning Up

Leak Precaution: dyke to control spillage and prevent environmental contamination

Handling Spill: Ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminium shovel, & store in closed containers for recycling or disposal.

Other Information

Report spills to local health, safety and environmental authorities, as required.

Serious Fire Potential:

blanket spill with foam as a precaution against accidental ignition. Take extreme care to avoid sparks – do not operate (turn on OR off) electrical appliances near spill, unless explosion proof.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Always use non-sparking bronze or aluminium hand tools. All electrical and mechanical equipment (including lighting, switchgear and forklift trucks) used with or around this product must be explosion-proof.

Although this product cannot retain a static charge on agitation or transfer from one container to another, its flash point is low & it is prudent to ground or electrically bond the source container receiving container and transfer pump before transferring contents. Avoid splashing by ensuring that the product nozzle is below the surface in the receiving container.

Empty containers may contain a flammable / explosive vapour. Always ensure that containers, whether empty or full, are tightly sealed unless in use.

Avoid breathing product vapour. Use with adequate ventilation (see Part 8). If dealing with a spill, and ventilation is impossible or impractical, wear a suitable respirator with organic vapour cartridge.

Never cut, drill, weld or grind on or near this container. Avoid contact with skin & wash work clothes frequently. An eye bath must be available near the workplace.

Conditions for Safe Storage

Store & use in a cool, dry environment, away from sources of ignition, heat and substances named in Part 10.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Ontario TWAEV 200ppm / 590mg/m³
 ACGIH TLV 200ppm / 590mg/m³
 OSHA PEL 200ppm / 590mg/m³

Ontario STEV 300ppm / 885mg/m³
 ACGIH STEL 300ppm / 885mg/m³
 OSHA STEL 300ppm / 885mg/m³

Ventilation	<i>mechanical ventilation may be required to control airborne titre to regulated limits; respirators with organic vapour cartridges should be available for escape; store respirators in airtight containers (eg: "Tupperware" to maintain "freshness")</i>
Hands	<i>"Barrier" or "Silver Shield" gloves – other types may also protect; consult supplier for suitability</i>
Eyes	<i>Safety glasses with side shields – always protect the eyes</i>
Clothing	<i>wear impermeable (above) apron, boots, & long sleeves if there is any danger of splashing</i>

Appropriate Engineering Controls

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider: Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion proof ventilation equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES

Odour & Appearance	Clear colourless liquid. Sharp, sweetish acetone-like odour
Odour threshold	5-55ppm – geometric mean is 16ppm
pH	none – (does not liberate hydrogen ions when dissolved)
Melting point/Freezing point	-87°C / -124°F
Initial boiling point/boiling range	80°C / 175°F
Flash point	-9°C / 16°F (closed cup); also -6°C / 22°F closed cup)
Evaporation rate	2.6 (Butyl Acetate =1)
Flammability (solid; gas)	Not Available
Lower flammable/explosive limit	1.4%
Upper flammable/explosive limit	11.5%
Vapour pressure	126 hPa @ 25 °C, 77 °F;
Vapour density	2.5

Specific Gravity	0.806 (20/20°C)
Water Solubility	275 grams per litre (20°C / 68°F). Also soluble in most organic solvents
Partition coefficient – n-octanol/water	0.29, also 0.3
Auto ignition temperature	404°C / 759°F – also 505°C / 940°F
Decomposition temperature	No data available
Viscosity	0.43centipoise (20°C / 68°F)
Physical State	Liquid
Molecular Weight	72 grams per mole
Molecular Formula	C4-H8-O

10. STABILITY AND REACTIVITY

Dangerously Reactive with strong oxidising agents; strong acids.

Chemical Stability - Also Reactive with strong acids; forms shock sensitive peroxides with mixtures of H₂O₂ Hydrogen Peroxide & HNO₃ (Nitric Acid)

Possibility of Hazardous Reactions

Reacts with strong oxidising agents.

Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources. Prevent vapour accumulation. In certain circumstances product can ignite due to static electricity.

Incompatible materials

Strong oxidising agents.

Hazardous decomposition products

Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

Mechanical Impact

Not sensitive

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

LD₅₀ (oral) 3000 & 3140mg/kg (mouse), 1740, 2350, 2740 & 2600-5400mg/kg (rat)

LD50 (skin) 6480 & 8050mg/kg (rabbit)

LC50 (inhalation) 11,500ppm (rat), 10,880 & 30,200ppm (mouse), 10,200ppm (guinea pig)

Skin Corrosion/Irritation

Aggressively drying – “whitens” skin (by removing oils); classified “not irritating”

Serious Eye Damage/Irritation

Liquid may be severely irritating; vapour irritating above 200ppm

11. TOXICITY, CONTINUED

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Respiratory irritation at 200ppm (no neurological symptoms after 4 hours); dizziness, drowsiness, intoxication, nausea at higher airborne titres

Skin Absorption

Yes; but no toxic effects likely by this route

Ingestion

Headache, dizziness, drowsiness, nausea, intoxication – not a route of industrial exposure

STOT (Specific Target Organ Toxicity) - Repeated Exposure

Prolonged exposure may cause dermatitis through removal of protective skin oils.

Respiratory and/or Skin Sensitization

Not a sensitizer in humans (only one reported case) or animals

Carcinogenicity

Not considered a tumorigen or a carcinogen in humans or animals. IARC: Not specifically listed. ACGIH®: Not specifically designated. NTP: Not specifically listed. OSHA: Not specifically listed.

Reproductive Toxicity

Sexual Function and Fertility

No known effect in humans; fetotoxic in rodents only at doses producing maternal symptoms; malformations occur in rats after 18 days at 3000ppm (15x the human irritation level)

Germ Cell Mutagenicity

Not known to be a mutagen

12. ECOLOGICAL INFORMATION

Bioaccumulation	<i>not a bioaccumulator; biological ½-life is 4-5 hours</i>
Persistence and Degradability	Biodegradation - <i>biodegrades readily & rapidly in the presence of oxygen; 89% in 20 days, 98% in 28 days, anaerobic 89% in 21days</i> Abiotic Degradation - <i>reacts with atmospheric hydroxyl radicals; estimated ½-life in air 14 days; 4 days (direct photolysis)</i>
Mobility in soil, water	<i>water soluble; moves readily in soil and water</i>
Aquatic Toxicity	
LC50 (Fish, 96hr)	<i>2993 & 3220mg/litre (Pimephelas promelas), 5600mg/litre (Gambusia affinis), 4467mg/litre (Lepomis macrochirus)</i>
EC50 (Crustacea, 48hr)	<i>308mg/litre (Daphnia magna)</i>
EC50 (Crustacea, 24hr) EC3 (Algae, 72hrs)	<i>7060 & 8890mg/litre (Daphnia magna) 1200mg/litre (Microcystis aeruginosa), 4300mg/litre (Scenedesmus quadricauda), 1972mg/litre (Pseudokirchnerella subcapitata)</i>
EC50 (Bacteria)	<i>5100mg/litre (Photobacterium phosphoreum), 2982mg/litre (Paramecium chilomonas)</i>
EC3 (Bacteria)	<i>1150mg/litre (Pseudomonas putida), 2830mg/litre (Urenoma parduzci)</i>

13. DISPOSAL CONSIDERATIONS

Waste Disposal

Do not flush to sewer, recycle solvent if possible, local regulations may permit disposal in sanitary landfill, may be incinerated in approved facility after mixing with a suitable flammable waste

Containers

Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.

Pails must be vented and thoroughly dried prior to crushing and recycling.

IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs).

Steel containers must be inspected, pressure tested & recertified every 5 years.

Never cut, drill, weld or grind on or near this container, even if empty

14. TRANSPORT INFORMATION

Canada TDG	UN / PIN #	UN1193	
AND	Shipping Name	Methyl Ethyl Ketone	
U.S.A. 49 CFR	Class & Packing Group	3,PG II	

Marine Pollutant	Not a marine pollutant
ERAP Required (CA only)	No
Emergency Response Guide No.	127
Reportable Quantity (RQ – USA only)	5,000 lbs (2,270kg)

15. REGULATORY INFORMATION

Canada DSL	On Inventory
U.S.A. TSCA	On Inventory
Europe EINECS	On Inventory

Canadian Regulations

CEPA - National Pollutant Release Inventory (NPRI)

Part 1A, Part 5.

U.S.A. Regulations

Immediately Dangerous to Life or Health: 3000 ppm

Acceptable Daily Intakes: ... An Acceptable Daily Intake (ADI), defined as the amount of a chemical to which humans can be exposed on a daily basis over an extended period of time (usually a lifetime) without suffering a deleterious effect, for methyl ethyl ketone is 3.2 mg/day for oral exposure.

Allowable Tolerances: Residues of methyl ethyl ketone are exempted from the requirement of a tolerance when used as a surfactant in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only.

OSHA Standards: Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 200 ppm (590 mg/cu m). Vacated 1989 OSHA PEL TWA 200 ppm (590 mg/cu m); STEL 300 ppm (885 mg/cu m) is still enforced in some states.

NIOSH Recommendations: Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 200 ppm (590 mg/cu m). Recommended Exposure Limit: 15 Min Short-Term Exposure Limit: 300 ppm (885 mg/cu m).

Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 200 ppm; 15 min Short Term Exposure Limit (STEL): 300 ppm. Biological Exposure Index: Determinant: methyl ethyl ketone in urine; Sampling Time: end of shift; BEI: 2 mg/L.

Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and

reconstructed SOCM1 process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. Methyl ethyl ketone is produced, as an intermediate or final product, by process units covered under this subpart. Listed as a hazardous air pollutant generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Methyl ethyl ketone is included on this list.

Federal Drinking Water Guidelines: EPA 4,000 ug/L

State Drinking Water Guidelines: Arizona 170 ug/L Florida 4,200 ug/L Massachusetts 4,000 ug/L Maine 3,600 ug/L Minnesota 4,000 ug/L New Hampshire 4,000 ug/L New Jersey 270 ug/L Wisconsin 460 ug/L

CERCLA Reportable Quantities: Persons in charge of vessels or facilities are required to notify the National Response Centre (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 5000lb or 2270kg. The toll free number of the NRC is (800) 424-8802. The rule for determining when notification is required is stated in 40 CFR 302.4 (IV. D.3.b).

TSCA Requirements: Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. Methyl ethyl ketone is included on this list. Effective date 10/4/1982, Sunset date 10/4/1992.

RCRA Requirements: As stipulated in 40 CFR 261.33, when 2-butanone, as a commercial chemical product or manufacturing chemical intermediate or an off-specification commercial chemical product or a manufacturing chemical intermediate, becomes a waste, it must be managed according to Federal and/or State hazardous waste regulations. Also defined as a hazardous waste is any residue, contaminated soil, water, or other debris resulting from the cleanup of a spill, into water or on dry land, of this waste. Generators of small quantities of this waste may qualify for partial exclusion from hazardous waste regulations (40 CFR 261.5). When methyl ethyl ketone is a spent solvent, it is classified as a hazardous waste from a nonspecific source (F005), as stated in 40 CFR 261.31, and must be managed according to State and/or Federal hazardous waste regulations. A solid waste containing methyl ethyl ketone may or may not become characterized as a hazardous waste when subjected to the Toxicity Characteristic Leaching Procedure listed in 40 CFR 261.24, and if so characterized, must be managed as a hazardous waste.

FIFRA Requirements: Residues of methyl ethyl ketone are exempted from the requirement of a tolerance when used as a surfactant in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. **FDA Requirements:** Methyl ethyl ketone is an indirect food additive for use only as a component of adhesives. Methyl ethyl ketone is a food additive permitted for direct addition to food for human consumption as a synthetic flavoring substance and adjuvant in accordance with the following conditions: a) they are used in the minimum quantity required to produce their intended effect, and otherwise in accordance with all the principles of good manufacturing practice, and 2) they consist of one or more of the following, used alone or in combination with flavoring substances and adjuvants generally recognized as safe in food, prior-sanctioned for such use, or regulated by an appropriate section in this part.

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA (311/312) REPORTABLE HAZARD CATEGORIES: Fire. Immediate Health. Delayed Health.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program

State Reporting

California Proposition 65: This material is not known to contain a chemical substance known to the State of California to cause cancer, reproductive, or developmental toxicity under California Proposition 65.

International Regulatory

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

16. OTHER INFORMATION

NFPA RATING	Health 1	Flammability 3	Instability 0
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Prepared for Megaloid Laboratories by Rob Cangiano
Preparation Date: December 2003
Revision Dates: Sept 2006, Sept 2009, Sept 2012, July 2015, May 2018, Feb 2019, November 2020

Key to Abbreviations	ACGIH® = American Conference of Governmental Industrial Hygienists AIHA® = AIHA® Guideline Foundation HSDB® = Hazardous Substances Data Bank IARC = International Agency for Research on Cancer NIOSH = National Institute for Occupational Safety and Health NTP = National Toxicology Program OSHA = US Occupational Safety and Health Administration RTECS® = Registry of Toxic Effects of Chemical Substances
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). HSDB® database. US National Library of Medicine. Available from Canadian Centre for Occupational Health and Safety (CCOHS). NIOSH Pocket Guide database. National Institute for Occupational Safety and Health. Available from Canadian Centre for Occupational Health and Safety (CCOHS). Registry of Toxic Effects of Chemical Substances (RTECS®) database. Dassault Systèmes/BIOVIA ("BIOVIA"). Available from Canadian Centre for Occupational Health and Safety (CCOHS).
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