

Chemical Profiles

Methyl Ethyl Ketone

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What are other names or identifying information for methyl ethyl ketone?

CAS Registry No.: 78-93-3

Other Names: MEK, 2-Butanone, Methyl acetone

Main Uses: Solvent, chemical intermediate

Appearance: Clear colourless volatile liquid.

Odour: Sweet

Canadian TDG: UN1193

What is the WHMIS classification?

According to the Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST), [methyl ethyl ketone](#) can be classified as:

Flammable liquids - Category 2



Serious eye damage/eye irritation - Category 2



Specific target organ toxicity - single exposure (respiratory tract irritation) - Category 3 -
Respiratory tract irritation



Specific target organ toxicity – single exposure (narcotic effects) - Category 3 – Narcotic effects.



The signal word is danger.

The hazard statements are: Highly flammable liquid and vapour

- Causes serious eye irritation
- May cause respiratory irritation
- May cause drowsiness or dizziness

Please note that this classification was retrieved from the [CNESST](#) site on February 22, 2023 and was established by CNESST personnel to the best of their knowledge based on data obtained from scientific literature and it incorporates the criteria contained in the *Hazardous Products Regulations* (SOR/2015-17). It does not replace the supplier's classification which can be found on its Safety Data Sheet.

What are the most important things to know about methyl ethyl ketone in an emergency?

Emergency Overview: Clear colourless volatile liquid. Sweet odour. HIGHLY FLAMMABLE LIQUID AND VAPOUR. Distant ignition and flashback are possible. May cause drowsiness and dizziness. IRRITANT. Causes moderate or severe eye irritation. ASPIRATION hazard. May be harmful if swallowed and enters airways.

What are the potential health effects of methyl ethyl ketone?

Main Routes of Exposure: Inhalation. Skin contact. Eye contact.

- **Inhalation:** Can irritate the nose and throat. At high concentrations: can harm the nervous system. Symptoms may include headache, nausea, dizziness, drowsiness and confusion. A severe exposure can cause unconsciousness.
- **Skin Contact:** May cause mild irritation. Can be absorbed through the skin, but harmful effects are not expected.
- **Eye Contact:** EYE IRRITANT. Causes moderate to severe irritation. Symptoms include sore, red eyes, and tearing. The vapour also irritates the eyes.
- **Ingestion:** If large amounts are ingested: Can cause effects as described for inhalation. May be drawn into the lungs if swallowed or vomited, causing severe lung damage. Death can result.
- **Effects of Long-Term (Chronic) Exposure:** Can cause dry, red, cracked skin (dermatitis) following skin contact. May harm the nervous system. Conclusions cannot be drawn from the limited studies available.
- **Carcinogenicity:** Not known to cause cancer.
 - International Agency for Research on Cancer (IARC): Not specifically evaluated.
 - American Conference for Governmental Industrial Hygienists (ACGIH): Not specifically designated.
- **Teratogenicity / Embryotoxicity:** Not known to harm the unborn child.
- **Reproductive Toxicity:** Not known to be a reproductive hazard.

- **Mutagenicity:** Not known to be a mutagen.
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What are first aid measures for methyl ethyl ketone?

Inhalation: Take precautions to prevent a fire (e.g., remove sources of ignition). Move victim to fresh air. Get medical attention if the victim feels unwell.

Skin Contact: Take off contaminated clothing, shoes, and leather goods (e.g., watchbands, belts). Flush with gently flowing water. If irritation or pain persists, get medical attention immediately. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely.

Eye Contact: Immediately flush the contaminated eye(s) with gently flowing water, occasionally lifting the upper and lower eyelids. If a contact lens is present, DO NOT delay flushing or attempt to remove the lens. Take care not to rinse contaminated water into the unaffected eye or onto the face. Get medical attention immediately.

Ingestion: Have victim rinse mouth with water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Get medical attention immediately.

First Aid Comments: All first aid procedures should be periodically reviewed by a medical professional familiar with the chemical and its conditions of use in the workplace.

What are fire hazards and extinguishing media for methyl ethyl ketone?

Flammable Properties: HIGHLY FLAMMABLE LIQUID. Can ignite at room temperature. Releases vapour that can form explosive mixture with air. Can be ignited by static discharge.

Suitable Extinguishing Media: Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog. Foam manufacturers should be consulted for recommendations regarding types of foams and application rates. Use water to keep non-leaking, fire-exposed containers cool.

Specific Hazards Arising from the Chemical: Vapour may travel a considerable distance to a source of ignition and flash back to a leak or open container. Vapour may accumulate in hazardous amounts in low-lying areas especially inside confined spaces, resulting in a toxicity hazard. Closed containers may rupture violently when heated releasing contents. In a fire, the following hazardous materials may be generated: very toxic carbon monoxide, carbon dioxide; toxic, flammable aldehydes; and other chemicals.

What are the stability and reactivity hazards of methyl ethyl ketone?

- **Chemical Stability:** Normally stable.
 - **Conditions to Avoid:** Open flames, sparks, static discharge, heat and other ignition sources. Prolonged exposure air and heat. Prolonged storage.
 - **Incompatible Materials:** Reacts violently with: strong oxidizing agents (e.g. perchloric acid), strong acids (e.g. hydrochloric acid). Not corrosive to: aluminum alloys, carbon steel.
 - **Hazardous Decomposition Products:** None known.
 - **Possibility of Hazardous Reactions:** Prolonged (12 month) exposure to air and heat, or long-term storage can produce explosive peroxides.
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What are unintentional release measures for methyl ethyl ketone?

Personal Precautions: Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Eliminate all ignition sources. Use grounded, explosion-proof equipment.

Methods for Containment and Clean-up: Contain and soak up spill with absorbent that does not react with spilled product. Contaminated absorbent poses the same hazard as the spilled product. Large spills or leaks: contact emergency services and manufacturer/supplier for advice.

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

What handling and storage practices should be used when working with methyl ethyl ketone?

Handling: Eliminate heat and ignition sources such as sparks, open flames, hot surfaces and static discharge. Post "No Smoking" signs. Electrically bond and ground equipment. Ground clips must contact bare metal. Avoid generating vapours or mists.

Storage: Store in an area that is: cool, well-ventilated, clear of combustible and flammable materials (e.g. old rags, cardboard), separate from incompatible materials, out of direct sunlight and away from heat and ignition sources. Electrically bond and ground containers. Ground clips must contact bare metal.

What is the American Conference of Governmental Industrial Hygienists (ACGIH®) recommended exposure limit for methyl ethyl ketone?

ACGIH® TLV® - TWA: 200 ppm BEI

ACGIH® TLV® - STEL [C]: 300 ppm

Exposure Guideline Comments: TLV® = Threshold Limit Value. TWA = Time-Weighted Average. BEI® = Biological Exposure Index. STEL = Short-term Exposure Limit. C = Ceiling limit

Adapted from: 2022 TLVs® and BEIs® - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati: American Conference of Governmental Industrial Hygienists (ACGIH)

NOTE: In many (but not all) Canadian jurisdictions, the exposure limits are similar to the ACGIH® TLVs®. Since legislation varies by jurisdiction, contact your local jurisdiction for exact details. A list is available in the OSH Answers on [Canadian Governmental Occupational Health & Safety Departments](#).

A list of which acts and regulations that cover [exposure limits to chemical and biological agents](#) is available on our website. Please note that while you can see the list of legislation for free, you will need a subscription to view the actual documentation.

What are the engineering controls for methyl ethyl ketone?

Engineering Controls: Use a local exhaust ventilation and enclosure, if necessary, to control amount in the air. For large scale use of this product: use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored.

What Personal Protective Equipment (PPE) is needed when working with methyl ethyl ketone?

Eye/Face Protection: Wear chemical safety goggles and face shield when contact is possible.

Skin Protection: Avoid repeated or prolonged skin contact. Wear chemical protective clothing e.g. gloves, aprons, boots. [Suitable materials](#) include: AlphaTec® (02-100, 4000, EVO, VPS) Kembrok®, Silver Shield® - PE/EVAL/PE, Chemprotex® 300, Frontline® 500, Tychem® (5000, 9000, Responder® CSM, 10000, 10000 FR), Zytron®(300, 500).

Not recommended: natural rubber, neoprene rubber, nitrile rubber, polyvinylchloride – PVC, Viton®, Viton®/Butyl rubber, Saranex®.

Respiratory Protection:

Up to 3000 ppm:

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode*; or Any powered, air-purifying respirator with organic vapor cartridge(s)*.

(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s); or Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister; or Any self-contained breathing apparatus with a full facepiece; or Any supplied-air respirator with a full facepiece.

*Causes eye irritation or damage; eye protection needed.

APF = Assigned Protection Factor

Recommendations apply only to National Institute for Occupational Safety and Health (NIOSH) approved respirators. Refer to the [NIOSH Pocket Guide to Chemical Hazards](#) for more information.

Fact sheet last revised: 2023-02-10

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