Chemical Profiles

Acetone

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What are other names or identifying information for acetone?

CAS Registry No.: 67-64-1
Other Names: 2-Propanone, Dimethyl ketone, Propanone
Main Uses: Solvent, chemical intermediate
Appearance: Clear colourless volatile liquid
Odour: Sweet, fragrant, mint-like

Canadian TDG: UN1090

What is the WHMIS classification?

According to the Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST), acetone can be classified as:

Flammable liquids - Category 2

Serious eye damage/eye irritation - Category 2A

The signal word is danger.

The hazard statements are:

- Highly flammable liquid and vapour
- Causes serious eye irritation

Please note that this classification was retrieved from the CNESST site on Februrary 21, 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 acetone 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.

What are the potential health effects of acetone?

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:** Not harmful. If large amounts are ingested: Can cause effects as described for inhalation.
- **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): A4 - Not classifiable as a human carcinogen.
- **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

What are first aid measures for acetone?

Inhalation: Take precautions to prevent a fire (e.g. remove sources of ignition). Move victim to fresh air. If breathing has stopped, perform artificial respiration. Get medical attention as soon as possible.

Skin Contact: Take off contaminated clothing, shoes, and leather goods (e.g., watchbands, belts). Flush with gently flowing water for 5 minutes. Use soap if available. If irritation or pain persists, get medical attention. 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 for 15-20 minutes while holding the eyelid(s) open. 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: Call a Poison Centre or doctor 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 acetone?

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. Even dilute solutions in water may be flammable.

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. 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; very toxic flammable formaldehyde; corrosive acetic acid; and other chemicals.

What are the stability and reactivity hazards of acetone?

- **Chemical Stability:** Normally stable.
- **Conditions to Avoid:** Open flames, sparks, static discharge, heat and other ignition sources. Prolonged exposure to sunlight.
- **Incompatible Materials:** Reacts violently with: oxidizing agents (e.g. peroxides), organic acids (e.g. acetic acid), strong reducing agents (e.g. hydrides). Not corrosive to: aluminum alloys, carbon steel.
- **Hazardous Decomposition Products:** None known.
- **Possibility of Hazardous Reactions:** None known.

What are unintentional release measures for acetone?

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. Increase ventilation to the area or move leaking container to a well-ventilated and secure area.

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. Place used absorbent into suitable, covered, labelled containers for disposal. Flush spill area.

Large spills or leaks: Dike spilled product to prevent runoff. 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 acetone?

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. Do not weld, cut or perform hot work on empty container until all traces of product have been removed.

Storage: Store in an area that is: cool, well-ventilated, out of direct sunlight and away from heat and ignition sources. Electrically bond and ground containers. Ground clips must contact bare metal. Install pressure and vacuum-relief venting in all drums. Equip storage tank vents with a flame arrestor.

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

ACGIH® TLV® - TWA: 250 ppm. A4 BEI®

ACGIH® TLV® - STEL [C]: 500 ppm

Exposure Guideline Comments: TLV® = Threshold Limit Value. TWA = Time-Weighted Average. A4 = Not classifiable as a human carcinogen. BEI® = Biological Exposure Index. STEL = Short-term Exposure Limit. C = Ceiling limit.

Adapted from: 2022TLVs® 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 acetone?

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. Exhaust directly to the outside, taking any necessary precautions for environmental protection.

What Personal Protective Equipment (PPE) is needed when working with acetone?

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 (8 hours): butyl rubber, AlphaTec® (02-100, 4000, EVO, and VPS) Kemblok®, Silver Shield® - PE/EVAL/PE, Chemprotex® 300, ChemMAX® (3 and 4 Plus), Frontline® 500, Tychem® (5000, 6000, 6000 FR, 9000, Responder® CSM, 10000, and 10000 FR), Zytron® (300 and 500)

Respiratory Protection:

Up to 2500 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*; or Any supplied-air respirator*.
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*.
(APF = 50) 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.

*Reported to cause eye irritation or damage; may require eye protection.

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.

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