

SAFETY DATA SHEET



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ACETONE

SDS No. M0003

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Acetone

Synonyms: Dimethyl Ketone, 2-Propanone

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION

**Classification:**

Flammable Liquids: GHS Category 2

Eye Irritation: GHS Category 2A

Specific Target Organ Toxicity for single exposure: GHS Category 3 (central nervous system)

Label Elements

Signal Word: DANGER!

Hazard Statements:

H225 – Highly flammable liquid and vapor.

H319 – Causes serious eye irritation.

H336 – May cause drowsiness or dizziness.

Precautionary Statements:

P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P240 – Ground/bond container and receiving equipment.

P243 – Take precautionary measures against static discharge.

P280 – Wear protective gloves/protective clothing/eye protection/face protection.

P303+P361+P353 – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340+P312 – IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 – If eye irritation persists: Get medical advice/ attention.

P403+P233 – Store in a well-ventilated place. Keep container tightly closed.

P405 – Store locked up.

P501 – Dispose of contents/ container to an approved waste disposal plant.

Emergency Overview

Highly flammable liquid and vapor! Vapor may cause flash fire. Causes serious eye irritation. High vapor concentrations may cause drowsiness and irritation of the respiratory tract. Prolonged or repeated skin contact may cause drying, cracking, and irritation. Target Organs: Central nervous system, eyes, and skin

HMIS Rating:

Health – 1 Flammability – 3 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Acetone	67-64-1	100%	Yes

4. FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air. If breathing is labored or with coughing, give 100% supplemental oxygen. If not breathing, begin artificial respiration. Get medical aid.

Ingestion: **Do not** induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person. Rinse mouth with water. Get medical aid.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Soap and cold water may be used. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Highly flammable liquid and vapor (GHS Category 2)

Auto-ignition Temperature: 465° C (869° F)

Flash Point: -20° C (-4° F)

Flammable Limits: Lower Limit – 2.5 vol %, Upper Limit – 12.8 vol %

Products of Combustion: Will decompose into highly toxic and irritating gases (carbon monoxide and carbon dioxide) under fire conditions.

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

Specific Explosion Hazards: None

Fire Fighting Media: Use water spray, dry chemical, carbon dioxide, or alcohol-resistant foam. Water may be ineffective because it will not cool acetone below its flash point.

National Fire Protective Association: Health - 1, Flammability - 3, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Always use proper personal protective equipment. Use only non-sparking tools and equipment. Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area and remove all ignition sources. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. A vapor suppressing foam may be used.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment. Wash thoroughly after handling. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor.

Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or face shield and safety glasses. Use butyl rubber gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary. A full face respirator is recommended.

Exposure Limits:

ACGIH – 500 ppm TWA; 750 ppm STEL

NIOSH – 250 ppm REL; 590 mg/m³ TWA; 2500 ppm IDLH

OSHA Final PELs – 1000 ppm TWA; 2400 mg/m³ TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- a) Appearance Form: clear, liquid Color: colorless
- b) Odor pungent, weakly aromatic
- c) Odor Threshold 0.1 ppm
- d) pH 5 - 6 at 395 g/l at 20 °C (68 °F)
- e) Melting point/freezing point Melting point/range: -94 °C (-137 °F) - lit.
- f) Initial boiling point and boiling range 56 °C 133 °F at 1,013 hPa - lit.
- g) Flash point -17.0 °C (1.4 °F) - closed cup
- h) Evaporation rate No data available
- i) Flammability (solid, gas) No data available
- j) Upper/lower flammability or explosive limits Upper explosion limit: 13 %(V) Lower explosion limit: 2 %(V)
- k) Vapor pressure 245.3 hPa at 20.0 °C (68.0 °F)
- l) Vapor density No data available
- m) Density 0.791 g/cm³ at 25 °C (77 °F) - lit. Relative density No data available
- n) Water solubility soluble, in all proportions
- o) Partition coefficient: n-octanol/water No data available
- p) Autoignition temperature 465.0 °C (869.0 °F)
- q) Decomposition temperature Distillable in an undecomposed state at normal pressure.
- r) Viscosity No data available
- s) Explosive properties No data available
- t) Oxidizing properties none

9.2 Other safety information

Conductivity 0.01 $\mu\text{S}/\text{cm}$ at 20 °C (68 °F)
Surface tension 23.2 mN/m at 20.0 °C (68.0 °F)

10. STABILITY AND REACTIVITY

Stability: Stable at room temperatures in closed containers under normal temperatures and pressures.

Conditions to Avoid: Ignition sources, high temperatures, electrical sparks, and confined spaces.

Incompatibility With Various Substances: Strong oxidizing agents, strong reducing agents, strong bases, nitric acid, hexachloromelamine, sulfur dichloride, potassium tert-butoxide.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Inhalation of high concentrations can produce central nervous system effects such as nausea, headache, dizziness, unconsciousness, and coma. Causes respiratory tract irritation. May cause motor incoordination and speech abnormalities.

INGESTION HAZARD: May cause irritation of the digestive tract. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma, and possible death due to respiratory failure. Aspiration into lungs may cause chemical pneumonitis, which may be fatal.

SKIN CONTACT HAZARD: Irritation due to defatting action on skin may cause redness, pain, drying and cracking of the skin. May be absorbed through the skin.

EYE CONTACT HAZARD: Vapors are irritating to the eyes and may cause a burning sensation, redness, tearing, inflammation, and possible corneal injury.

Chronic Exposure Hazards: Prolonged or repeated skin contact may produce severe irritation or dermatitis.

Chronic inhalation may cause effects similar to acute inhalation. Matsushita, et al. exposed human volunteers to 500 ppm for 6 hours per day for 6 days and found hematological changes including significantly increase leukocyte and eosinophil counts and decreased neutrophil phagocyte activity.

Animal Toxicity:

Draize test, rabbit, eye: 20 mg/24 Hr Moderate;

Draize test, rabbit, skin: 500 mg/24 Hr Mild;

Inhalation, rat: LC50 = 50,100 mg/m³/4H;

Oral, rat: LD50 = 5800 mg/kg;

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: In a series of studies, no statistically different significances in cause of death or clinical laboratory results were observed in 948 employees exposed to up to 1070 ppm acetone over 23 years.

Teratogenicity: Animal studies have only shown harmful effects in the offspring of animals exposed to doses that also produced significant maternal toxicity.

Reproductive Effects: During the Stewart et al. study, four adult female volunteers were exposed 7.5 hours to acetone vapor at a nominal concentration of 1000 ppm. Three of the four women experienced premature menstrual periods which were attributed to the acetone exposure.

Mutagenicity: Sex chromosome loss and nondisjunction (Yeast – *Saccharomyces cerevisiae*) = 47,600 ppm; Cytogenetic analysis (Rodent – hamster Fibroblast) = 40 gm/L.

Neurotoxicity: No information found .

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Clear focus. Consistent results. Complete confidence.

EC50 Invertebrate: Water flea (*Daphnia magna*) – 13,500 mg/l, 48 hrs.

LC50 Fish: Rainbow trout – 5540 mg/l, 96 hrs.

LC50 fish: Bluegill/sunfish – 8300 mg/l, 95 hrs.

Environmental Fate: Volatilizes, leeches, and biodegrades when released to soil.

Terrestrial fate: If released on soil, acetone will not volatilize and leech into the ground. Acetone readily biodegrades and there is evidence suggesting that biodegrades fairly rapidly in soil.

Aquatic Fate: If released into water, acetone will probably biodegrade. It is readily biodegradable in screening tests, although data from natural water are lacking. It will also be lost due to volatilization (estimated half life 20 hours from a model river). Adsorption to sediment should not be significant. Atmospheric Fate: In the atmosphere, acetone will be lost by photolysis and reaction with photochemically produced hydroxyl radicals. Half life estimates from these combined processes are 79 and 13 days in January and June, respectively, for an overall annual average of 22 days. Therefore, considerable dispersion should occur. Being miscible in water, wash out by rain should be an important removal process. This process has been confirmed around Lake Shinsei-ko in Japan. There, acetone was found in the air and rain, as well as the lake.

Special Remarks: None

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. This material is listed as U002 (ignitable waste) under 40 CFR 261.33.

14. TRANSPORT INFORMATION

US DOT

Proper Shipping Name: Acetone

Hazard Class: 3

UN Number: UN1090

Packing Group: II

IMDG

Proper Shipping Name: Acetone

Hazard Class: 3

UN Number: UN1090

Packing Group: II

IATA

Proper Shipping Name: Acetone

Hazard Class: 3

UN Number: UN1090

Packing Group: II

15. REGULATORY INFORMATION

US Federal Regulations:

CERCLA Hazardous Substances: CAS# 67-64-1: 5000 lbs final RQ; 2270 kg final RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 67-64-1 – acute, fire, chronic

Section 313: Acetone (CAS# 67-64-1) is not subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.

Clean Air Act: CAS# 67-64-1 is not listed as a hazardous air pollutant (HAP).

Clean Water Act: CAS# 67-64-1 is not listed as a Hazardous Substance. OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 67-64-1 is on the following state right-to-know lists: New Jersey, Pennsylvania, and Massachusetts

California Prop 65 Components: This product does not contain any chemicals known to the state of California to cause cancer, birth defects, or any other reproductive harm.

Canada:

DSL/NDL: CAS# 67-64-1 is listed on Canada's DSL list.

WHMIS: This product has a WHMIS classification of B2, D2B. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and this MSDS contains all the information required by those regulations.

Ingredient Disclosure List: CAS# 67-64-1 is listed on Canada's Ingredient Disclosure List.

DSCL (EEC):

Hazard Symbols: Xi; F

Risk Phrases: R11 – Highly Flammable; R36 – Irritating to eyes; R66 – Repeated exposure may cause skin dryness and cracking; R67 – Vapors may cause drowsiness and dizziness.

Safety Phrases: S16 – Keep away from sources of ignition-no smoking; S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice; S9 – Keep container in well ventilated place

WGK (Water Danger/protection): CAS# 67-64-1: 0

16. OTHER INFORMATION

Originally Prepared: 10/24/2006

Last Revised: 7/18/2023 – General review of this safety data sheet resulted in textual changes in all sections. Physical properties in section 9 were updated.

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.

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