
MSDS**Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.
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Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

ACETALDEHYDE

MSDS Number: A0060 --- *Effective Date: 09/15/98*

1. Product Identification

Synonyms: Acetic aldehyde; ethanal; ethyl aldehyde

CAS No.: 75-07-0

Molecular Weight: 44.05

Chemical Formula: CH₃CHO

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
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Acetaldehyde	75-07-0	100%	Yes

3. Hazards Identification

Emergency Overview

DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HAZARDOUS POLYMERIZATION MAY OCCUR. MAY FORM EXPLOSIVE PEROXIDES IN AIR. CAUSES SEVERE EYE IRRITATION. HARMFUL IF SWALLOWED OR INHALED. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT. POSSIBLE CANCER HAZARD. MAY CAUSE CANCER

BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

Potential Health Effects

Inhalation:

Exposure to vapors causes irritation to the mucous membranes and respiratory tract, coughing, dizziness, light sensitivity, sore throat, and labored breathing. Large exposures may cause irregular heartbeat, narcosis, delayed pulmonary edema and death by respiratory failure.

Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. Toxic! May cause systemic poisoning with symptoms paralleling those of inhalation.

Skin Contact:

Vapor and liquid cause irritation, redness, and pain. Prolonged contact with liquid may cause erythema and burns, although rapid evaporation limits this possibility.

Eye Contact:

Vapors cause irritation, redness, and pain. Liquid splashes may cause burning sensation, severe irritation, blurred vision and temporary eye damage.

Chronic Exposure:

Repeated exposure to vapors may cause dermatitis and conjunctivitis. Liver and kidney damage is associated with chronic exposure to acetaldehyde. There is inadequate evidence for the carcinogenicity of acetaldehyde to humans, but there is sufficient evidency for the carcinogenicity of acetaldehyde in animals.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin or eye disorders or impaired liver, kidney, or pulmonary function may be more susceptible to the effects of this agent. Alcoholics are specially affected because alcohol is metabolized to acetaldehyde in the blood and additional exposure to acetaldehyde can aggravate problems.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Eye Contact:

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

5. Fire Fighting Measures

Fire:

Flash point: -38C (-36F) CC

Autoignition temperature: 175C (347F)

Flammable limits in air % by volume:

lcl: 4; ucl: 60

Reactive and Extremely Flammable liquid.

Fire may produce poisonous gases.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above.

Vapors can flow along surfaces to distant ignition source and flash back. May oxidize readily in air to form peroxides that may explode spontaneously. Contact with strong oxidizers or incompatibilities may cause fires and explosions. Sensitivity to mechanical impact: Yes, if peroxides are formed. Closed containers exposed to heat may explode.

Sensitive to static discharge.

Fire Extinguishing Media:

Dry chemical, foam or carbon dioxide. Water may be ineffective. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

Special Information:

This highly flammable liquid must be kept from sparks, open flame, hot surfaces, and all sources of heat and ignition. In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Fight fires from a safe distance. Structural firefighters' clothing provides only limited protection to the combustion products of this material.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! Neutralize with sodium bisulfate. If material has mixed with water at concentrations of 10 ppm or greater, apply activated carbon at ten times the spilled amount. If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Protect against physical damage. Store bulk quantities outside in detached tanks provided with refrigeration and inert gas blanket, such as nitrogen, in void space above liquid level. Smaller container storage should be in a detached noncombustible building, provided with cooling facilities, adequate ventilation and free of sources of ignition; no alkaline materials (such as caustics, ammonia, amines), halogens, alcohols, ketones, acid anhydrides, phenols, nor oxidizing materials, permitted in storage room. Inside storage should be in a standard flammable liquids storage room or cabinet. Isolate from other storage. Containers should be bonded and grounded for transfers to avoid static sparks. Acetaldehyde may form unstable peroxides. Use caution when distilling or evaporating. Do not distill or evaporate to dryness. Drums containing acetaldehyde should never be stored in direct sunlight or other warm areas. **DANGER! DO NOT OPEN Unless Contents Are At 50F or Below For At Least 24 hours.** Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):

200 ppm (TWA)

-ACGIH Threshold Limit Value (TLV):

25 ppm Ceiling, listed as A3, animal carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. 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. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details. Use explosion-proof equipment.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a full facepiece respirator with organic vapor cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres. The cartridges recommended for this material have a predicted service of less than 30 minutes at concentrations of ten times (10x) the exposure limits. Actual service life will vary considerably, depending on concentration levels, temperature, humidity, and work rate.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain

eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid. Rapidly volatilizes at 69F.

Odor:

Pungent, irritating odor; may be fruity and pleasant at low concentrations.

Solubility:

Miscible in water.

Specific Gravity:

0.79 @ 16C/4C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

21C (70F)

Melting Point:

-123.5C (-191F)

Vapor Density (Air=1):

1.52 @ 21C (70F).

Vapor Pressure (mm Hg):

750 @ 20C (68F)

Evaporation Rate (BuAc=1):

49.1

10. Stability and Reactivity

Stability:

Highly reactive and unstable. Can be oxidized or reduced readily. All reactions can be violent. Forms acetic acid while liberating heat in the presence of air and moisture. May form unstable peroxides which may spontaneously explode and burst container. May polymerize liberating much heat.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Polymerizes when contaminated with acids, alkalis, and trace metals..

Incompatibilities:

Amines, acetic acid, strong bases, polymerization catalysts, acid anhydrides, air, alcohols, ammonia (anhydrous), bromine, chlorine, fluorine, hydrogen cyanide, hydrogen sulfide, iodine, ketones, phenols, phosphorus, isocyanates, mercury II salts, sodium hydroxide and oxidizing agents.

Conditions to Avoid:

Heat, flame, ignition sources, air, incompatibles

11. Toxicological Information

Toxicological Data:

Oral rat LD50: 661 mg/kg; inhalation rat LC50: 15.6 gm/m³/4-hr; skin rabbit LD50: 3540 mg/kg; Irritation data: skin rabbit, Draize, 500 mg, open, mild; eye rabbit, Draize, 40 mg, severe; investigated as a mutagen, tumorigen, reproductive effector.

Reproductive Toxicity:

This material has been linked to mutagenic effects in humans.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	

Acetaldehyde (75-07-0)	No	Yes	2B

12. Ecological Information

Environmental Fate:

When released into the soil, this material may leach into groundwater. When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to quickly evaporate. When released into water, this material is expected to readily biodegrade. When released to water, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life of less than 1 day. This material has a log octanol-water partition coefficient of less than 3.0. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day.

Environmental Toxicity:

The LC50/96-hour values for fish are between 10 and 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: ACETALDEHYDE
Hazard Class: 3
UN/NA: UN1089
Packing Group: I
Information reported for product/size: 100G

International (Water, I.M.O.)

Proper Shipping Name: ACETALDEHYDE
Hazard Class: 3.1
UN/NA: UN1089
Packing Group: I
Information reported for product/size: 100G

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----
Ingredient TSCA EC Japan Australia

Acetaldehyde (75-07-0) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----
Ingredient Korea DSL --Canada-- NDSL Phil.

Acetaldehyde (75-07-0) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----
Ingredient -SARA 302- -SARA 313-----
RQ TPQ List Chemical Catg.

Acetaldehyde (75-07-0) No No Yes No

-----\Federal, State & International Regulations - Part 2\-----
Ingredient CERCLA -RCRA- -TSCA-
261.33 8(d)

Acetaldehyde (75-07-0) 1000 U001 Yes

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: Yes (Pure / Liquid)

WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: 2YE

Poison Schedule: No information found.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 4 Reactivity: 2

Label Hazard Warning:

DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HAZARDOUS POLYMERIZATION MAY OCCUR. MAY FORM EXPLOSIVE PEROXIDES IN AIR. CAUSES SEVERE EYE IRRITATION. HARMFUL IF SWALLOWED OR INHALED. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT. POSSIBLE CANCER HAZARD. MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

Label Precautions:

Keep away from heat, sparks and flame.

Keep container tightly closed.

Use only with adequate ventilation.

Do not breathe vapor.

Wash thoroughly after handling.

Do not get in eyes, on skin, or on clothing.

DO NOT OPEN Unless Contents Are At 50 or Below For At Least 24 Hours.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 14.

Disclaimer:

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