

# Material Safety Data Sheet

## Acetaldehyde, 99.5%

ACC# 91732

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Acetaldehyde, 99.5%

**Catalog Numbers:** AC149510000, AC149510010, AC149510100, AC149512500, S93102, O1004-250, S79878

**Synonyms:** Acetic aldehyde; Acetylaldehyde; Ethylaldehyde; Ethanal.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
75-07-0	Acetaldehyde	> 99.5	200-836-8

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: -27 deg C.

**Danger!** Air sensitive. Oxidizes readily in air to form unstable peroxides that may explode spontaneously. Hazardous polymerization may occur. Extremely flammable liquid and vapor. Vapor may cause flash fire. Causes severe eye irritation. Lachrymator (substance which increases the flow of tears). Causes respiratory tract irritation. May be harmful if swallowed. May cause skin irritation. May cause cancer based on animal studies. May cause lung damage. May cause central nervous system depression. May cause liver and kidney damage. Marine pollutant. Store in explosion-proof refrigerator.

**Target Organs:** Blood, kidneys, central nervous system, liver, lungs, eyes, skin.

#### Potential Health Effects

**Eye:** Causes severe eye irritation. Vapors may cause eye irritation. May cause transient corneal injury. Lachrymator (substance which increases the flow of tears).

**Skin:** May cause skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.

**Ingestion:** May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May be harmful if swallowed. May cause central nervous system depression.

**Inhalation:** Causes respiratory tract irritation. May cause narcotic effects in high concentration. Exposure produces central nervous system depression. Vapors may cause dizziness or suffocation. Can produce delayed pulmonary edema. Inhalation of large amounts may cause respiratory stimulation, followed by respiratory depression, convulsions and possible death due to respiratory paralysis.

**Chronic:** Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis. Prolonged skin contact may cause erythema (redness) and burns. Long-term inhalation studies of acetaldehyde produced laryngeal cancers in hamsters and nasal cancers in rats.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

**Skin:** In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical aid if symptoms occur. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Persons with kidney disease, chronic respiratory disease, liver disease, or skin disease may be at increased risk from exposure to this substance. Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Vapors may form an explosive mixture with air. Use water spray to keep fire-exposed containers cool. Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Extremely flammable liquid and vapor. Vapor may cause flash fire. Forms peroxides of unknown stability. Containers may explode in the heat of a fire. Will be easily ignited by heat, sparks or flame. 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. Sensitivity to mechanical impact: Yes, if peroxides are formed. Closed containers exposed to heat may explode. Sensitive to static discharge.

**Extinguishing Media:** For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Water may be ineffective. Do NOT use straight streams of water.

**Flash Point:** -27 deg C ( -16.60 deg F)

**Autoignition Temperature:** 175 deg C ( 347.00 deg F)

**Explosion Limits, Lower:**4.0%

**Upper:** 60.0%

**NFPA Rating:** (estimated) Health: 2; Flammability: 4; Instability: 2

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Use water spray to dilute spill to a non-flammable mixture. Avoid runoff into storm sewers and ditches which lead to waterways. Use water spray to disperse the gas/vapor. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. Place under an inert atmosphere. U.S. regulations require reporting spills and releases to soil, water and air in excess of reportable quantities.

## Section 7 - Handling and Storage

**Handling:** Ground and bond containers when transferring material. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Take precautionary measures against static discharges. Keep container tightly closed. Keep away from heat, sparks and flame. Do not ingest or inhale. Handle under an inert atmosphere. Store protected from air. This product may be under pressure; cool before opening. If peroxide formation is suspected, do not open or move container. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation.

**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Keep from freezing. Store in a tightly closed container. Keep from contact with oxidizing materials. Keep away from strong acids. Refrigerator/flammables. Keep away from reducing agents. Do not expose to air. Store in explosion-proof refrigerator. After opening, purge container with nitrogen before reclosing. Periodically test for peroxide formation on long-term storage. Addition of water or appropriate reducing materials will lessen peroxide formation. Store under an inert atmosphere.

## Section 8 - Exposure Controls, Personal Protection

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

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Acetaldehyde	25 ppm Ceiling	2000 ppm IDLH	200 ppm TWA; 360 mg/m3 TWA

**OSHA Vacated PELs:** Acetaldehyde: 100 ppm TWA; 180 mg/m3 TWA

### Personal Protective Equipment

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** clear, colorless

**Odor:** pungent odor - fruity odor

**pH:** Not available.

**Vapor Pressure:** 750 mm Hg @ 20 deg C

**Vapor Density:** 1.52

**Evaporation Rate:**49.1

**Viscosity:** Not available.

**Boiling Point:** 21 deg C

**Freezing/Melting Point:**-123 deg C

**Decomposition Temperature:**> 400 deg C

**Solubility:** Soluble.

**Specific Gravity/Density:**0.7800

**Molecular Formula:**C2H4O

**Molecular Weight:**44.04

## Section 10 - Stability and Reactivity

**Chemical Stability:** Unstable in air. May undergo autopolymerization. Forms explosive peroxides on prolonged storage and exposure to air. Polymerizes violently in the presence of traces of metals or acids.

**Conditions to Avoid:** Ignition sources, exposure to air, heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents, strong reducing agents, acids, strong bases, alcohols, amines, ammonia, halogens, phenols, phosphorus, isocyanates, acid anhydrides, hydrogen sulfide, air, ketones, hydrogen cyanide, cobalt chloride,

mercury (II) chlorate, mercury (II) perchlorate, trace metals.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, methane.

**Hazardous Polymerization:** May occur.

## Section 11 - Toxicological Information

### RTECS#:

**CAS#** 75-07-0: AB1925000

### LD50/LC50:

**CAS#** 75-07-0:

Draize test, rabbit, eye: 40 mg Severe;  
Inhalation, mouse: LC50 = 23 gm/m<sup>3</sup>/4H;  
Inhalation, mouse: LC50 = 20300 mg/m<sup>3</sup>/2H;  
Inhalation, rat: LC50 = 13300 ppm/4H;  
Inhalation, rat: LC50 = 25000 mg/m<sup>3</sup>;  
Oral, mouse: LD50 = 900 mg/kg;  
Oral, rat: LD50 = 661 mg/kg;  
Oral, rat: LD50 = 1930 mg/kg;  
Skin, rabbit: LD50 = 3540 mg/kg;

### Carcinogenicity:

**CAS#** 75-07-0:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** carcinogen, initial date 4/1/88
- **NTP:** Suspect carcinogen
- **IARC:** Group 2B carcinogen

**Epidemiology:** Inhalation, rat: TCLo = 735 ppm/6H/2Y-I (Tumorigenic - Carcinogenic by RTECS criteria - Sense Organs and Special Senses (Olfaction) - tumors).; Inhalation, hamster: TCLo = 2040 ppm/7H/52W-I (Tumorigenic - equivocal tumorigenic agent by RTECS criteria - Sense Organs and Special Senses (Olfaction) - tumors and Lungs, Thorax, or Respiration - tumors).

**Teratogenicity:** Oral, rat: TDLo = 4800 mg/kg (female 1-20 day(s) after conception) Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus) and Specific Developmental Abnormalities - respiratory system and hepatobiliary system.; Oral, rat: TDLo = 5040 mg/kg (female 1-21 day(s) after conception) Specific Developmental Abnormalities - Central Nervous System and Endocrine System and Urogenital System.; Oral, rat: TDLo = 5040 mg/kg (female 1-21 day(s) after conception) Effects on Newborn - growth statistics (e.g.%, reduced weight gain).

**Reproductive Effects:** Intraperitoneal, rat: TDLo = 50 mg/kg (female 12 day(s) after conception) Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants).; Intravenous, mouse: TDLo = 4 gm/kg (female 6 day(s) after conception) Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants).

**Mutagenicity:** DNA Damage: Human, Lymphocyte = 1560 umol/L.; DNA Inhibition: Human Cells - not otherwise specified = 30 mmol/L.; Mutation test systems - not otherwise specified: = Human Cells - not otherwise specified = 30 mmol/L.; DNA Inhibition: Human, HeLa cell = 10 mmol/L.; Cytogenetic Analysis: Human, Leukocyte = 1000 ppm/72H (Continuous).; Sister Chromatid Exchange: Human, Lymphocyte = 1200 umol/L.; Mutation in Mammalian Somatic Cells: Human, Fibroblast = 5 mmol/L.

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** Fish: Fathead Minnow: EC50 = 30.8-37.2 mg/L; 96 Hr; Flow-through at 21.6-23.9°C (pH 7.1-7.63) Fish: Bluegill/Sunfish: LC50 = 53 mg/L; 96 Hr; Unspecified Water flea Daphnia: EC50 = 9000-14000 mg/L; 48 Hr; Unspecified Bacteria: Phytobacterium phosphoreum: EC50 = 280.6-403.5 mg/L; 5,15,25 min; Unspecified No data available.

**Environmental:** In the atmosphere it will degrade in a matter of hours by reaction with hydroxyl radicals and photolysis. If released into water it will rapidly biodegrade and volatilize (half-life 3 hrs for a typical river). If spilled on land it will also rapidly evaporate and leach into the ground where it will biodegrade.

**Physical:** Log P(oct) = 0.5

**Other:** No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:**

**CAS#** 75-07-0: waste number U001 (Ignitable waste).

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	ACETALDEHYDE	ACETALDEHYDE
<b>Hazard Class:</b>	3	3
<b>UN Number:</b>	UN1089	UN1089
<b>Packing Group:</b>	I	I
<b>Additional Info:</b>		FLASHPOINT -39 C

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 75-07-0 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

CAS# 75-07-0: 1000 lb final RQ; 454 kg final RQ

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

#### SARA Codes

CAS # 75-07-0: immediate, delayed, fire, reactive.

#### Section 313

This material contains Acetaldehyde (CAS# 75-07-0, > 99.5%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

#### Clean Air Act:

CAS# 75-07-0 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

#### Clean Water Act:

CAS# 75-07-0 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### OSHA:

CAS# 75-07-0 is considered highly hazardous by OSHA.

#### STATE

CAS# 75-07-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

#### California Prop 65

#### The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains Acetaldehyde, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: CAS# 75-07-0: 90 µg/day NSRL (inhalation)

### European/International Regulations

#### European Labeling in Accordance with EC Directives

#### Hazard Symbols:

XN F+

#### Risk Phrases:

R 12 Extremely flammable.

R 36/37 Irritating to eyes and respiratory system.

R 40 Limited evidence of a carcinogenic effect.

#### Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 33 Take precautionary measures against static discharges.

S 36/37 Wear suitable protective clothing and gloves.

#### WGK (Water Danger/Protection)

CAS# 75-07-0: 1

#### Canada - DSL/NDSL

CAS# 75-07-0 is listed on Canada's DSL List.

#### Canada - WHMIS

not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

#### Canadian Ingredient Disclosure List

CAS# 75-07-0 is listed on the Canadian Ingredient Disclosure List.

## Section 16 - Additional Information

**MSDS Creation Date:** 1/11/2001

**Revision #3 Date:** 10/03/2005

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*