
1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Acetaldehyde

Product Number : 402788
Brand : Sigma-Aldrich

Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # (For : (314) 776-6555
both supplier and
manufacturer)

Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION**Emergency Overview****OSHA Hazards**

Flammable liquid, Carcinogen, Target Organ Effect, Irritant

Target Organs

Blood, Kidney, Lungs, Cardiovascular system., Liver, Central nervous system

Other hazards which do not result in classification

May form explosive peroxides.

GHS Classification

Flammable liquids (Category 1)

Acute toxicity, Inhalation (Category 5)

Acute toxicity, Dermal (Category 5)

Skin irritation (Category 3)

Eye irritation (Category 2A)

Carcinogenicity (Category 2)

Specific target organ toxicity - single exposure (Category 3), Respiratory system

Acute aquatic toxicity (Category 3)

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H224

Extremely flammable liquid and vapour.

H313 + H333

May be harmful in contact with skin or if inhaled.

H316

Causes mild skin irritation.

H319

Causes serious eye irritation.

H335

May cause respiratory irritation.

H351

Suspected of causing cancer.

H402

Harmful to aquatic life.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P281 Use personal protective equipment as required.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Other hazards

Lachrymator., Photosensitizer.

May form explosive peroxides.

HMIS Classification

Health hazard: 2
Chronic Health Hazard: *
Flammability: 4
Physical hazards: 2

NFPA Rating

Health hazard: 2
Fire: 4
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.
Ingestion May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Ethanal
Formula : C₂H₄O
Molecular Weight : 44.05 g/mol

Component	Concentration
Acetaldehyde	
CAS-No. 75-07-0	90 - 100 %
EC-No. 200-836-8	
Index-No. 605-003-00-6	

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Conditions of flammability

Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical

May explode when heated. Closed containers may rupture and explode during runaway polymerization. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature: 2 - 8 °C

Store under inert gas. Air sensitive.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Acetaldehyde	75-07-0	C	25 ppm	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Eye & Upper Respiratory Tract irritation Confirmed animal carcinogen with unknown relevance to humans			
	Potential Occupational Carcinogen See Appendix C See Appendix A			
		TWA	200 ppm 360 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	The value in mg/m3 is approximate.			

		STEL	150 ppm 270 mg/m ³	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	100 ppm 180 mg/m ³	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: 480 min

Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: 480 min

Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form liquid, clear

Colour colourless

Safety data

pH 5 at 20 °C (68 °F)

Melting point/freezing point Melting point/range: -125 °C (-193 °F)

Boiling point 21 °C (70 °F)

Flash point -40 °C (-40 °F) - closed cup

Ignition temperature 175 °C (347 °F)

Auto-ignition temperature	no data available
Lower explosion limit	4 %(V)
Upper explosion limit	60 %(V)
Vapour pressure	1,008.5 hPa (756.4 mmHg) at 20 °C (68 °F) 1,451 hPa (1,088 mmHg) at 30 °C (86 °F) 2,660 hPa (1,995 mmHg) at 55 °C (131 °F)
Density	0.785 g/mL at 25 °C (77 °F)
Water solubility	completely miscible
Partition coefficient: n-octanol/water	log Pow: 0.5
Relative vapour density	1.52 - (Air = 1.0)
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability

Avoid exposure to air any longer than necessary so as to prevent peroxide formation. Stable under recommended storage conditions.

Possibility of hazardous reactions

Vapours may form explosive mixture with air.

Conditions to avoid

Air

Heat, flames and sparks. Extremes of temperature and direct sunlight.

Materials to avoid

Oxidizing agents, Reducing agents, acids, Nitric acid, Peroxides, Bases, Sodium Hydroxide, Amines, Ammonia, Oxygen, Warning: acetaldehyde is oxidized rapidly and exothermically by air, to acetic acid, Acid anhydrides, Alcohols, Halogens, Ketones, Phenol, Hydrogen sulfide gas, Hydrogen peroxide

Hazardous decomposition products

Other decomposition products - no data available

Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

Lowest observable effect level Oral - rat - 675 mg/kg

Inhalation LC50

LC50 Inhalation - rat - 4 h - 13300 ppm

Remarks: Behavioral:Excitement. Lungs, Thorax, or Respiration:Dyspnea.

Dermal LD50

LD50 Dermal - rabbit - 3,540 mg/kg

Other information on acute toxicity

no data available

Skin corrosion/irritation

Skin - rabbit - Mild skin irritation - OECD Test Guideline 404

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitisation

Maximisation Test - guinea pig - OECD Test Guideline 406 - Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Laboratory experiments have shown mutagenic effects.

Carcinogenicity

This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Limited evidence of carcinogenicity in animal studies

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Acetaldehyde)

NTP: Reasonably anticipated to be a human carcinogen (Acetaldehyde)

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.

Signs and Symptoms of Exposure

Blurred vision, Unconsciousness, Headache, Vomiting, Nausea, Pulmonary edema. Effects may be delayed., Convulsions, sneezing, Cough, Shortness of breath

Synergistic effects

no data available

Additional Information

RTECS: AB1925000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 31 mg/l - 96 h
Toxicity to daphnia	Immobilization EC50 - Daphnia magna (Water flea) - 57.4 mg/l - 48 h

and other aquatic invertebrates Method: OECD Test Guideline 202

Toxicity to algae Growth inhibition EC50 - Pseudokirchneriella subcapitata (green algae) - > 100 mg/l - 24 h
Method: OECD Test Guideline 201

Persistence and degradability

Biodegradability Biotic/Aerobic
Result: 80 % - Readily biodegradable.
Method: OECD Test Guideline 301C

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic life.

13. DISPOSAL CONSIDERATIONS

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 1089 Class: 3 Packing group: I
Proper shipping name: Acetaldehyde
Reportable Quantity (RQ): 1000 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 1089 Class: 3 Packing group: I EMS-No: F-E, S-D
Proper shipping name: ACETALDEHYDE
Marine pollutant: No

IATA

UN number: 1089 Class: 3 Packing group: I
Proper shipping name: Acetaldehyde
IATA Passenger: Not permitted for transport

15. REGULATORY INFORMATION

OSHA Hazards

Flammable liquid, Carcinogen, Target Organ Effect, Irritant

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Acetaldehyde	75-07-0	2007-07-01

SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Acetaldehyde

CAS-No.
75-07-0Revision Date
2007-07-01**Pennsylvania Right To Know Components**

Acetaldehyde

CAS-No.
75-07-0Revision Date
2007-07-01**New Jersey Right To Know Components**

Acetaldehyde

CAS-No.
75-07-0Revision Date
2007-07-01**California Prop. 65 Components**

WARNING! This product contains a chemical known to the State of California to cause cancer.

CAS-No.
75-07-0Revision Date
2007-09-28

Acetaldehyde

16. OTHER INFORMATION**Further information**

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