



SDS DATE: April 25, 2023

**SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**

**PRODUCT NAME:** Aldehyde Dehydrogenase Activity Assay  
**PRODUCT CODES:** Cat# MA-0169  
**RESTRICTIONS ON USE:** For laboratory research purposes only. Not for drug or household use.  
**MANUFACTURER:** AkrivisBio, Inc.  
**ADDRESS:** 48511 Warm Springs Blvd., Suite 213, Fremont, CA 94539  
**EMERGENCY PHONE:** 408-739-9315  
**EMAIL:** [sds@akrivisbio.com](mailto:sds@akrivisbio.com)

**SECTION 2: HAZARDS IDENTIFICATION**

Component	Description	Volume	Safety Information
ALDH Assay Buffer	Proprietary Buffer (contains Tergitol)	25 ml	No hazards
Acetaldehyde	Solution	0.5 ml	See below
ALDH Substrate Mix	Lyophilized	1 vial	No hazards
ALDH Positive Control	Lyophilized	1 vial	No hazards
NADH Standard (0.5 µmol)	Lyophilized	1 vial	No hazards

**Tergitol:****Emergency Overview****GHS Classification:** Skin irritation (Category 2), H315

Skin sensitization (Sub-category 1A), H317

Short-term (acute) aquatic hazard (Category 1), H400

Long-term (chronic) aquatic hazard (Category 1), H410

**GHS Label elements, including precautionary statements****Pictogram:****Signal word:**

Warning

**Hazard statement(s):**

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H410 Very toxic to aquatic life with long lasting effects.

**Precautionary statement(s):** P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P272 Contaminated work clothing must not be allowed out of the workplace.

P273 Avoid release to the environment.

P280 Wear protective gloves.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P362 Take off contaminated clothing and wash before reuse.

P391 Collect spillage.

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

**HMIS Classification****Health hazard:** 0**Chronic health hazard:****Flammability:** 0**Physical hazards:** 0**NFPA Rating****Health hazard:** 0**Fire:** 0**Reactivity hazard:** 0**Potential Health Effects****Inhalation:** May be harmful if inhaled. Material is irritating to the tissue of the mucous membranes and upper respiratory tract. Harmful; if inhaled. May cause allergy or asthma symptoms or breathing difficulties.**Skin:** May be harmful if absorbed through skin. May cause an allergic skin reaction.**Eyes:** Causes eye irritation.**Ingestion:** Harmful if swallowed.

To the best of our knowledge, the toxicological properties have not been thoroughly investigated

**Acetaldehyde:****Emergency Overview****OSHA Hazards:** Flammable liquid, Carcinogen, Target organ effect, Harmful by ingestion, Skin sensitizer, Irritant**Target Organs:** Blood, Kidney, Lungs, Cardiovascular system, Liver, Central nervous system**GHS Classification:**

Flammable liquids (Category 1)

Acute toxicity, Oral (Category 4)

Acute toxicity, Inhalation (Category 5)

Acute toxicity, Dermal (Category 5)

Skin irritation (Category 3)

Eye irritation (Category 2A)

Skin sensitization (Category 1)

Carcinogenicity (Category 2)

Specific target organ toxicity – single exposure (Category 3)

Acute aquatic toxicity (Category 3)

**GHS Label elements, including precautionary statements****Pictogram:****Signal word:**

Danger

**Hazard statement(s):**

H224 Extremely flammable liquid and vapour.

H302 Harmful if swallowed.

H313+H333 May be harmful in contact with skin or if inhaled.



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H316 Causes mild skin irritation.  
H317 May cause an allergic skin reaction.  
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/fumes/gas/mist/vapors/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**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:** Harmful if absorbed through skin. Causes skin irritation.  
**Eyes:** Causes eye irritation.  
**Ingestion:** Harmful if swallowed.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	EC-No.	Molecular Weight	Chemical Formula
Tergitol	84133-50-6	617-534-0	--	--
Acetaldehyde	75-07-0	200-836-8	44.05	C <sub>2</sub> H <sub>4</sub> O

### SECTION 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. Take victim immediately to hospital. 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.

### SECTION 5: FIRE-FIGHTING MEASURES

**Acetaldehyde:**  
**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 vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.  
**Special protective equipment for firefighters:** Wear self-contained breathing apparatus for firefighting if necessary.  
**Hazardous combustion products:** Hazardous decomposition products formed under fire conditions – see section 10.  
**Further information:** Use water spray to cool unopened containers.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors 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 for 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).

### SECTION 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: -20 °C

### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### **Tergitol:**

##### **Control parameters**

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Poly(ethylene oxide)	US WEEL	TWA aerosol	10 mg/m3

**Engineering Controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

#### **Acetaldehyde:**

##### **Control parameters**

Exposure limits are listed below, if they exist.



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	CAS-No.	Value	Control parameters	Basis
Acetaldehyde	75-07-0	C	25 ppm	USA. OSHA – TABLE Z-1 Limits for Air Contaminants – 1910.1000
Remarks:	Upper respiratory tract irritation. Confirmed animal carcinogen with unknown relevance to humans.			
		TWA	100 ppm 180 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants
		STEL	150 ppm 270 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants
See Appendix D – Substances with no established RELs				

**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 ABEK (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.

**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. 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.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

Property	Tergitol	Acetaldehyde
<b>Appearance:</b>	Liquid	Clear liquid
<b>pH:</b>	7.2	5 at 20 °C (68 °F)
<b>Water Solubility:</b>	<0.5%	Completely miscible
<b>Other Solubility:</b>	No data available	No data available
<b>Boiling Point (°C):</b>	> 200 °C (> 392 °F)	21 °C (70 °F)
<b>Melting Point (°C):</b>	No data available	-125 °C (-193 °F)
<b>Flash Point (°C):</b>	218 °C (424 °F) ASTM D 93, closed cup	-40 °C (-40 °F)
<b>Ignition Temperature (°C):</b>	No data available	175 °C (347 °F)
<b>Density:</b>	1.027 g/ml	0.785 g/ml

**SECTION 10: STABILITY AND REACTIVITY**

Property	Tergitol	Acetaldehyde
<b>Chemical stability:</b>	Stable under recommended storage conditions	Avoid exposure to air, any longer than necessary so as to prevent peroxide formation.
<b>Conditions to avoid:</b>	Strong heating	Air, heat, flames, & sparks. Extremes of temperature and direct sunlight.
<b>Materials to avoid:</b>	Strong acids, strong bases, Strong oxidizing agents	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
<b>Hazardous decomposition products:</b>	Carbon oxides (fire condition)	Carbon oxides

**SECTION 11: TOXICOLOGICAL INFORMATION**

**Tergitol:**

**Acute toxicity:** no data available

**Skin corrosion/irritation:** Skin – rabbit – mild skin irritation.

**Serious eye damage/eye irritation:** Eyes – rabbit – severe eye irritation.

**Respiratory or skin sensitization:** Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals.

**Germ cell mutagenicity:** no data available

**Carcinogenicity:**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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

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

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 (GHS):** Inhalation – may cause respiratory irritation.

**Specific target organ toxicity – repeated exposure (GHS):** no data available

**Potential Health Effects**

**Inhalation:** May be harmful if inhaled. Causes respiratory tract irritation.

**Skin:** Harmful if absorbed through skin. Causes skin irritation.

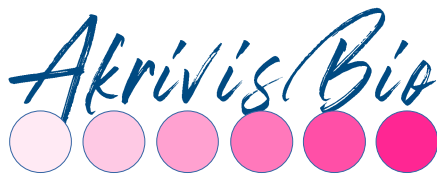
**Eyes:** Causes eye irritation.

**Ingestion:** Harmful if swallowed.

**Signs and Symptoms of Exposure:** Exposure may cause nausea, headache, and/or vomiting. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Additional information:** no data available

**Acetaldehyde:**



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**Acute toxicity:** LD50 Oral – rat – 661 mg/kg → Remarks: Peripheral Nerve & Sensation: spastic paralysis with or without sensory change. Behavioral: altered sleep time (including change in righting reflex). Lungs, Thorax, or Respiration: dyspnea.  
LC50 Inhalation – rat – 4 h – 13300 ppm → Remarks: Behavioral: excitement. Lungs, Thorax, or Respiration: dyspnea.  
LD50 Dermal – rabbit – 3,540 mg/kg

**Skin corrosion/irritation:** Skin – rabbit – mild skin irritation

**Serious eye damage/eye irritation:** no data available

**Respiratory or skin sensitization:** May cause allergic skin reaction. Photosensitizer.

**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)

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

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 (GHS):** Inhalation – may cause respiratory irritation.

**Specific target organ toxicity – repeated exposure (GHS):** no data available

**Aspiration hazard:** no data available

**Potential Health Effects**

**Inhalation:** May be harmful if inhaled. Causes respiratory tract irritation.

**Skin:** Harmful if absorbed through skin. Causes skin irritation.

**Eyes:** Causes eye irritation.

**Ingestion:** Harmful if swallowed.

**Signs and Symptoms of Exposure:** Exposure may cause 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

## SECTION 12: ECOLOGICAL INFORMATION

**Tergitol:**

**Toxicity:** No data available

**Persistence and degradability:** Readily biodegradable

**Bioaccumulative potential:** No data available

**Mobility in soil:** No data available

**PBT and vPvB assessment:** No data available

**Other adverse effects:** No data available

**Acetaldehyde:**

**Persistence and degradability:** no data available

**Toxicity: Toxicity to fish:** LC50 – Pimephales promelas (Fathead minnow) – 31 mg/l – 96 h

LC100 – Leuciscus idus (Golden orfe) – 124-156 mg/l – 48 h

**Toxicity to daphnia and other aquatic invertebrates:** EC50 – Daphnia magna (Water flea) – 48 mg/l – 48 h

**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.

## SECTION 13: DISPOSAL CONSIDERATIONS

**Tergitol:**

**Product:** Waste material must be disposed of in accordance with the national and local No mixing with other waste.

**Product:** Observe all federal, state, and local environmental regulations.

**Contaminated packaging:** Dispose of as unused product.

## SECTION 14: TRANSPORT INFORMATION

**Tergitol:**

**DOT (US):** Not dangerous goods

**IMDG:** Not dangerous goods

**IATA:** Not dangerous goods

**Acetaldehyde:**

**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

## SECTION 15: REGULATORY INFORMATION

**OSHA Hazards:** Acetaldehyde: Flammable liquid, Carcinogen, Target organ effect, Harmful by ingestion, Skin sensitizer, Irritant

**SARA 302 Components:** SARA 302: No chemical 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:

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

**SARA 311/312 Hazards:** Tergitol: Acute Health Hazard; Acetaldehyde: Fire Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components:** Acetaldehyde, CAS- No. 75-07-0; Revision Date: 2007-07-01

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

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

**California Prop. 65 Components:** WARNING! This product contains a chemical known to the State of California to cause cancer:

Acetaldehyde, CAS- No. 75-07-0; Revision Date: 2007-09-28

**EU regulations**

Component	Risk Phrases	Safety Phrases
Acetaldehyde	R12, R36/37, R40	S16, S33, S36/37

## SECTION 16: OTHER INFORMATION



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**DISCLAIMER:**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. AkrivisBio Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.