

Cayman Chemical Company  
1180 E. Ellsworth Rd.  
Ann Arbor, MI 48108

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**1. Product and Company Identification**

**Product Code:** 32100  
**Product Name:** 4-hydroxy Nonenal  
**Manufacturer Information**  
**Company Name:** Cayman Chemical Company  
**Emergency Contact:** Cayman Chemical Company (800)364-9897  
**Information:** Cayman Chemical Company (734)971-3335  
**Chemical Family:** Autoxidation  
**RTECS #:** RA8510000  
**Synonyms:** (+/-)-4-hydroxy-2E-nonenal; 4-HNE

**2. Composition/Information on Ingredients**

Hazardous Components (Chemical Name)	CAS #	Percentage	OSHA PEL	ACGIH TLV	Other Limits
1. 4-hydroxy Nonenal	75899-68-2	1.0 %	No data.	No data.	No data.
2. Ethyl alcohol	64-17-5	99.0 %	BH TWA:1000 ppm (1900 mg/m3)	1000 ppm	No data.

  

Hazardous Components (Chemical Name)	RTECS #	OSHA STEL	OSHA CEIL	ACGIH STEL	ACGIH CEIL
1. 4-hydroxy Nonenal	NA	No data.	No data.	No data.	No data.
2. Ethyl alcohol	KQ6300000	No data.	No data.	No data.	No data.

**3. Hazards Identification**

**Emergency Overview:** No data available.  
**Route(s) of Entry:** Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? Yes Other: Injection  
**Potential Health Effects (Acute and Chronic):** The hazards identified with this product are those associated with the solvent(s).  
Long term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis.  
Material is irritating to the mucous membranes and upper respiratory tract.  
May be harmful by inhalation, ingestion, or skin absorption.  
May cause eye, skin, or respiratory system irritation.  
Repeated exposure may cause skin dryness or cracking.  
Repeated ingestion of ethanol by pregnant mothers has been shown to adversely affect the CNS system of the fetus, producing a collection of effects which together constitute fetal alcohol syndrome. These include mental and physical retardation, disturbances of learning, motor and language deficiencies, behavioral disorders and small size head.  
The toxicological properties of this compound have not been fully evaluated.  
**LD 50/LC 50:** Please refer to Section 11.  
**Signs and Symptoms Of Exposure:** Exposure may cause: Dizziness, drowsiness, headache, nausea, and vomiting.  
**Medical Conditions Generally Aggravated By Exposure:** Repeated exposure to ethanol may aggravate liver injury produced from other causes.

**4. First Aid Measures**

**Emergency and First Aid Procedures:** If inhaled remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.  
If swallowed, wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.  
In case of contact with eyes, hold eyelids apart and flush eyes with plenty of water. After initial flushings, remove any contact lenses and continue flushing for at least 20 minutes. Have eyes examined and tested by medical personnel.  
In case of skin contact, immediately wash skin with soap and plenty of water. Remove

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contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

**5. Fire Fighting Measures**

**Flash Pt:** 14.00 C Method Used: TCC  
**Explosive Limits:** LEL: 3.3% at 25.0 C UEL: 19% at 25.0 C  
**Fire Fighting Instructions:** As in any fire, wear self-contained breathing apparatus pressure-demand (MSHA/NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.  
Note: Flammable as diluted in ethanol.  
**Flammable Properties and Hazards:** Can release vapors that form explosive mixtures at temperatures at or above the flashpoint.  
Container explosion may occur under fire conditions.  
Emits toxic fumes under fire conditions.  
Flammable liquid.  
Vapors can travel to a source of ignition and flash back.  
**Hazardous Combustion Products:** carbon dioxide  
carbon monoxide  
**Extinguishing Media:** Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray when fighting fires involving this material.  
**Unsuitable Extinguishing Media:** No data available.

**6. Accidental Release Measures**

**Steps To Be Taken In Case Material Is Released Or Spilled:** Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. After removal, ventilate contaminated area and flush thoroughly with water.

**7. Handling and Storage**

**Hazard Label Information:** Avoid contact with skin and eyes. Do not reuse this container. Use with adequate ventilation.  
Wash thoroughly after handling.  
**Precautions To Be Taken in Handling:** Avoid breathing (dust, vapor, mist, gas).  
Avoid contact with eyes, skin, and clothing.  
Avoid prolonged or repeated exposure.  
Do not reuse this container.  
Keep away from sources of ignition.  
Use with adequate ventilation.  
Wash thoroughly after handling.  
**Precautions To Be Taken in Storing:** Store at correct temperature.

**8. Exposure Controls/Personal Protection**

**Protective Equipment Summary - Hazard Label Information:** Eye wash station in work area Lab coat Latex disposable gloves Safety glasses Safety shower in work area Vent Hood  
**Respiratory Equipment (Specify Type):** No data available.  
**Eye Protection:** Safety glasses  
**Protective Gloves:** Latex disposable gloves  
**Other Protective Clothing:** Lab coat  
**Engineering Controls (Ventilation etc.):** Good general ventilation should be sufficient to control airborne levels.  
**Work/Hygiene/Maintenance Practices:** Do not take internally.  
Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.  
Wash thoroughly after handling.

**9. Physical and Chemical Properties**

**Physical States:** [ ] Gas [X] Liquid [ ] Solid  
**Melting Point:** No data.  
**Boiling Point:** No data.

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**Autoignition Pt:** No data.  
**Flash Pt:** 14.00 C Method: TCC  
**Explosive Limits:** LEL: 3.3% at 25.0 C UEL: 19% at 25.0 C  
**Specific Gravity (Water = 1):** No data.  
**Vapor Pressure (vs. Air or mm Hg):** 44.6 MM\_HG at 20.0 C  
**Vapor Density (vs. Air = 1):** No data.  
**Evaporation Rate (vs Butyl Acetate=1):** No data.  
**Solubility in Water:** > 1 mg/ml\* at 25.0 C  
**Other Solubility Notes:** \*PBS pH 7.2, sol. in EtOH, DMSO & DMF  
**Percent Volatile:** N.A.  
**Corrosion Rate:** No data.  
**Formula:** C9H16O2  
**Molecular Weight:** 156.20  
**pH:** No data.  
**Appearance and Odor:** A clear, colorless solution

**10. Stability and Reactivity**

**Stability:** Unstable [ ] Stable [X]  
**Conditions To Avoid - Instability:** No data available.  
**Incompatibility - Materials To Avoid:** strong inorganic acids  
strong oxidizing agents  
**Hazardous Decomposition Or Byproducts:** carbon dioxide  
carbon monoxide  
**Hazardous Polymerization:** Will occur [ ] Will not occur [X]  
**Conditions To Avoid - Hazardous Polymerization:** No data available.

**11. Toxicological Information**

**Toxicological Information:** The toxicological effects of this compound have not been thoroughly studied.  
**Chronic Toxicological Effects:** Investigated as a mutagen and carcinogen.  
Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here.  
See actual entry in RTECS for complete information.  
4-hydroxy Nonenal RTECS Number: RA8510000  
**Carcinogenicity/Other Information:** No data available.  
**Carcinogenicity:** NTP? No IARC Monographs? No OSHA Regulated? No

**12. Ecological Information**

**Ecological Information:** Runoff from fire control or dilution water may cause pollution.

**13. Disposal Considerations**

**Waste Disposal Method:** Dispose in accordance with local, state and federal regulations.

**14. Transport Information**

**LAND TRANSPORT (US DOT)**  
**DOT Proper Shipping Name:** Ethyl alcohol  
**DOT Hazard Class:** 3  
**DOT Hazard Label:** FLAMMABLE LIQUID  
**UN/NA Number:** 1170  
**DOT Packing Group:** II  
**Additional Transport Information:** Transport in accordance with local, state, and federal regulations.

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**15. Regulatory Information**

**US EPA SARA Title III**

Hazardous Components (Chemical Name)	CAS #	Sec.302 (EHS)	Sec.304 RQ	Sec.313 (TRI)	Sec.110
1. 4-hydroxy Nonenal	75899-68-2	No	No	No	No
2. Ethyl alcohol	64-17-5	No	No	No	No

**US EPA CAA, CWA, TSCA**

Hazardous Components (Chemical Name)	CAS #	EPA CAA	EPA CWA NPDES	EPA TSCA	CA PROP 65
1. 4-hydroxy Nonenal	75899-68-2	No	No	No	No
2. Ethyl alcohol	64-17-5	No	No	No	No

**16. Other Information**

**Company Policy or Disclaimer**  
For research use only, not for human or veterinary clinical use.  
DISCLAIMER: This information 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.

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