

**Order  
Number**
**Customer  
Number**
**1. Identification of the substance/preparation and of the company/undertaking**

**Product name** : 4-Hydroxynonenal **Catalog #** : 393204  
**Chemical formula** : C<sub>9</sub>H<sub>16</sub>O<sub>2</sub> **Supplier** : Manufactured by EMD Biosciences, Inc.  
 10394 Pacific Center Court  
 San Diego, CA 92121  
 (858)450-5558/(800)854-3417  
 FAX: (858)453-3552  
**Synonym** : H-Hydroxy-2-nonenal; HNE

**Emergency telephone number** : **Call Chemtrec®**  
**(800)424-9300 (within U.S.A.)**  
**(703)527-3887 (outside U.S.A.)**

**2. Composition / information on ingredients**

**Substance/Preparation** : Substance

Chemical name*	CAS No.	EC Number	Symbol	R-Phrases
1) H-Hydroxy-2-nonenal; HNE	75899-68-2	Not available.	F	R11

**3. Hazards identification**

**Physical/chemical hazards** : Highly flammable.

**4. First-aid measures**
**First-Aid measures**

- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.  
**Ingestion** : Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.  
**Skin Contact** : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.  
**Eye Contact** : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

**Aggravating conditions** : Repeated or prolonged exposure is not known to aggravate medical condition.

**5. Fire-fighting measures**

**Flammability of the Product** : Flammable.

**Extinguishing Media**

- Suitable** : Flammable liquid.  
 SMALL FIRE: Use DRY chemical powder.  
 LARGE FIRE: Use alcohol foam, water spray or fog.

**Hazardous thermal (de)composition products** : These products are carbon oxides (CO, CO<sub>2</sub>).

**Special fire-fighting procedures** : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

**Protection of fire-fighters** : Be sure to use an approved/certified respirator or equivalent.

## 6. Accidental release measures

- Personal precautions** : Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
- Small Spill and Leak** : Absorb with an inert material and put the spilled material in an appropriate waste dispose
- Large Spill and Leak** : Flammable liquid.  
Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed.

## 7. Handling and storage

- Handling** : Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe gas/fumes/ vapor/spray.
- Storage** : Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Do not store above -70°C (-94°F).
- Packaging materials**
- Recommended use** : Use original container.

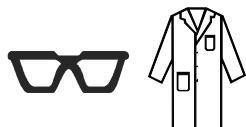
## 8. Exposure controls/personal protection

- Engineering measures** : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.
- Hygiene measures** : Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day.

<u>Ingredient Name</u>	<u>Occupational Exposure Limits</u>
1) 4-Hydroxynonenal	Not available.

### Personal protective equipment

- Respiratory system** : Wear appropriate respirator when ventilation is inadequate.
- Skin and body** : Lab coat.
- Eyes** : Safety glasses.
- Protective Clothing (Pictograms)** :



## 9. Physical and chemical properties

- Physical state** : Liquid. (Supplied in ethanol.)
- Color** : Not available.
- Molecular Weight** : 156.2 g/mole
- Solubility** : Not available.
- Flash point** : Not available.
- Explosive properties** : Risks of explosion of the product in presence of mechanical impact: Not available.  
Risks of explosion of the product in presence of static discharge: Not available.

## 10. Stability and reactivity

- Stability** : The product is stable.
- Conditions to avoid** : Not available.
- Hazardous Decomposition Products** : These products are carbon oxides (CO, CO2).

## 11. Toxicological information

- RTECS #** : **RA851000**
- Local effects**
- Skin irritation** : Not available.
- Acute toxicity** : LD50: Not available.  
LC50: Not available.
- Chronic toxicity** : Repeated or prolonged exposure is not known to aggravate medical condition.

**Other Toxic Effects on Humans** : Not available.  
No specific information is available in our database regarding the other toxic effects of this material for humans.  
Not available.  
Not available.

**Carcinogenic effects** : Not available.

**Mutagenic effects** : Not available.

**Reproduction toxicity** : Not available.

**Teratogenic effects** : Not available.

## 12. Ecological information

**Ecotoxicity** : Not available.

**Toxicity of the Products of Biodegradation** : The product itself and its products of degradation are not toxic.

## 13. Disposal considerations

**Methods of disposal; Waste of residues; Contaminated packaging** : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## 14. Transport information

### International transport regulations

**UN number** : UN1170

### Land - Road/Railway

**Proper shipping name** : Ethanol solution

**ADR/RID Class** : CLASS 3: Flammable liquid A.

**Packing Group** : III

**ADR/RID label** :



### Sea

**Proper shipping name** : Ethanol solution

**IMDG Class** : CLASS 3.1: Flammable liquid (Low flashpoint group of liquids having a flashpoint below -18°C (0°F) c.c.).

**Packing Group** : III

**IMDG label** :



### Air

**Proper shipping name** : Ethanol solution

**UN/ID Number** : UN1170

**IATA-DGR Class** : CLASS 3: Flammable liquid.

**IATA label** :



**Special Provisions for Transport** : Not available.

## 15. Regulatory information

### EU Regulations

Hazard symbol(s)

:



Classification

: Highly flammable

Risk Phrases

: R11- Highly flammable.

Safety Phrases

: S7- Keep container tightly closed.  
S16- Keep away from sources of ignition - No smoking.

### U.S. Federal Regulations

: TSCA: No products were found.  
SARA 302/304/311/312 extremely hazardous substances: No products were found.  
SARA 302/304 emergency planning and notification: No products were found.  
SARA 302/304/311/312 hazardous chemicals: No products were found.  
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: No products were found.  
SARA 313 toxic chemical notification and release reporting: No products were found.  
Clean Water Act (CWA) 307: No products were found.  
Clean Water Act (CWA) 311: No products were found.  
Clean air act (CAA) 112 accidental release prevention: No products were found.  
Clean air act (CAA) 112 regulated flammable substances: No products were found.  
Clean air act (CAA) 112 regulated toxic substances: No products were found.

HCS Classification

: CLASS: Flammable liquid having a flash point lower than 37.8°C (100°F).

State Regulations

:

### WHMIS (Canada)

: CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).  
No products were found.

## 16. Other information

**Hazardous Material  
Information System  
(U.S.A.)**

Health	0
Fire Hazard	1
Reactivity	0
Personal Protection	a

**National Fire  
Protection  
Association (U.S.A.)**



### Notice to Reader

*To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.*

**Date of issue**

Catalog # 393204

3/5/2003.

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