

## Chemical Safety Data Sheet MSDS / SDS

## L(-)-Epinephrine

Revision Date:2025-02-01 Revision Number:1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

## Product identifier

Product name : L(-)-Epinephrine  
CBnumber : CB8322199  
CAS : 51-43-4  
EINECS Number : 200-098-7  
Synonyms : Epinephrine,ADRENALINE

## Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

## Company Identification

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 010-86108875

## SECTION 2: Hazards identification

## Classification of the substance or mixture

Acute toxicity - Category 3, Oral  
Acute toxicity - Category 2, Dermal  
Acute toxicity - Category 3, Inhalation

## Label elements

## Pictogram(s)

□

Signal word Danger

## Hazard statement(s)

H300 Fatal if swallowed  
H310 Fatal in contact with skin  
H330 Fatal if inhaled

## Precautionary statement(s)

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
Chemical Book

P310 Immediately call a POISON CENTER or doctor/physician.

P320 Specific treatment is urgent (see ... on this label).

P330 Rinse mouth.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P302+P350 IF ON SKIN: Gently wash with plenty of soap and water.

P304+P340 IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing.

P405 Store locked up.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

#### **Prevention**

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P262 Do not get in eyes, on skin, or on clothing.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

#### **Response**

P301+P316 IF SWALLOWED: Get emergency medical help immediately.

P321 Specific treatment (see ... on this label).

P330 Rinse mouth.

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

P316 Get emergency medical help immediately.

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

#### **Storage**

P405 Store locked up.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

#### **Disposal**

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

#### **Other hazards**

no data available

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## SECTION 3: Composition/information on ingredients

#### **Substance**

|              |                          |
|--------------|--------------------------|
| Product name | : L(-)-Epinephrine       |
| Synonyms     | : Epinephrine,ADRENALINE |
| CAS          | : 51-43-4                |
| EC number    | : 200-098-7              |
| MF           | : C9H13NO3               |
| MW           | : 183.2                  |

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## SECTION 4: First aid measures

### Description of first aid measures

#### If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

#### Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

### Most important symptoms and effects, both acute and delayed

**SYMPTOMS:** Symptoms of exposure to this compound may include restlessness, anxiety, fear, throbbing headache, tremor, weakness, dizziness, palpitations, cerebral hemorrhage and cardiac arrhythmias. Other symptoms may include pallor, tenseness and respiratory difficulty. The blood pressure is markedly raised initially but may be below normal later, and may be accompanied by persistent anuria. Exposure may also result in ventricular fibrillation, dyspnea, hyperglycemia, tachycardia, coldness of the extremities and pulmonary edema. Exposure may also result in convulsions, nausea and vomiting, chills, cyanosis, irritability, fever, nervousness, suicidal behavior, mania, blurred vision, opisthotonus, spasms, gasping respiration, coma, respiratory failure and, rarely, death. Contact with this compound may cause irritation. It may also cause contact dermatitis. Inhalation may cause bronchial irritation, sleeplessness and rapid heartbeat. It may also cause epigastric pain. Inhalation or injection of the decomposed chemical will cause a psychosis-like state with hallucinations and morbid fears. Prolonged nasal use leads to chronic nasal congestion. Facial flushing has been reported. Other symptoms of exposure include faintness, trembling, perspiration and extrasystoles. Eye effects include epithelial disturbances such as allergy or contact sensitivity characterized by itching and burning sensation, epiphora and hyperemia of the conjunctiva and lids; reactive hyperemia, tiny black or dark-brown deposits in the conjunctiva, "black cornea", epithelial edema and, rarely, follicular conjunctivitis, white keratinized plaque in the conjunctiva, ocular pemphigoid, loss of eyelashes, excessive tearing and persistent meibomianitis. Other eye effects include corneal endothelial disturbances such as dilated pupils and corneal edema; retinopathy and choroidopathy; lens changes and intraocular pressure. Eye inflammation also occurs. **ACUTE/CHRONIC HAZARDS:** This compound is highly toxic by ingestion. It may be fatal by inhalation or skin absorption. It may cause irritation. When heated to decomposition it emits toxic fumes of carbon monoxide, carbon dioxide and nitrogen oxides. (NTP, 1992)

### Indication of any immediate medical attention and special treatment needed

**Immediate first aid:** Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on the left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Poisons A and B

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## SECTION 5: Firefighting measures

### Extinguishing media

Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. A water spray may also be used. (NTP, 1992)

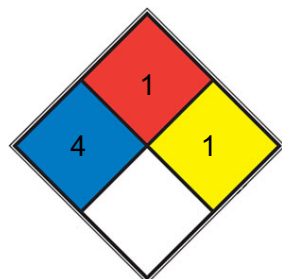
### Specific Hazards Arising from the Chemical

Flash point data for this chemical are not available. It is probably combustible. (NTP, 1992)

### Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### NFPA 704



**HEALTH 4** Very short exposure could cause death or major residual injury (e.g. hydrogen cyanide, phosgene, methyl isocyanate, [hydrofluoric acid](#))

**FIRE 1** Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur. Includes some finely divided suspended solids that do not require heating before ignition can occur. Flash point at or above 93.3 °C (200 °F). (e.g. [mineral oil](#), ammonia)

**REACT 1** Normally stable, but can become unstable at elevated temperatures and pressures (e.g. [propene](#))

**SPEC.**  
**HAZ.**

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

### Environmental precautions

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

### Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

## SECTION 7: Handling and storage

## Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

## Conditions for safe storage, including any incompatibilities

Epinephrine injection should be stored at room temperature (approximately 25 deg C).

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# SECTION 8: Exposure controls/personal protection

## Control parameters

### Occupational Exposure limit values

no data available

### Biological limit values

no data available

## Exposure controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

## Individual protection measures

### Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

### Skin protection

Wear fire/flamm resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

### Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

### Thermal hazards

no data available

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# SECTION 9: Physical and chemical properties

## Information on basic physicochemical properties

|                                                          |                         |
|----------------------------------------------------------|-------------------------|
| Physical state                                           | Fine Crystalline Powder |
| Colour                                                   | White to light beige    |
| Odour                                                    | Odorless                |
| Melting point/freezing point                             | 208-211°C               |
| Boiling point or initial boiling point and boiling range | 413.1°C at 760 mmHg     |
| Flammability                                             | no data available       |
| Lower and upper explosion                                | no data available       |

limit/flammability limit

|                                       |                                                                                                                        |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Flash point                           | 207.9°C                                                                                                                |
| Auto-ignition temperature             | no data available                                                                                                      |
| Decomposition temperature             | > 212°C                                                                                                                |
| pH                                    | no data available                                                                                                      |
| Kinematic viscosity                   | no data available                                                                                                      |
| Solubility                            | Practically insoluble in water, in ethanol (96 per cent) and in methylene chloride. It dissolves in hydrochloric acid. |
| Partition coefficient n-octanol/water | no data available                                                                                                      |
| Vapour pressure                       | 7.37X10 <sup>-8</sup> mm Hg at 25 deg C (est)                                                                          |
| Density and/or relative density       | 1.283 g/cm <sup>3</sup>                                                                                                |
| Relative vapour density               | no data available                                                                                                      |
| Particle characteristics              | no data available                                                                                                      |

## SECTION 10: Stability and reactivity

### Reactivity

This chemical darkens slowly on exposure to air and light. Water insoluble. Readily soluble in aqueous solutions of inorganic acids. Solutions undergo oxidation in the presence of oxygen.

### Chemical stability

In some commercially available injections, the air has been replaced with nitrogen to avoid oxidation. Withdrawal of doses from multiple-dose vials introduces air into the vials, subjecting the remaining epinephrine to oxidation. Oxidation of the drug imparts first a pink, then a brown color; epinephrine preparations must not be used if they have a pinkish or darker than slightly yellow color or contain a precipitate.

### Possibility of hazardous reactions

EPINEPHRINE is incompatible with oxidizers, alkalis, copper, iron, silver, zinc and other metals; gum and tannin. It is also incompatible with acids, acid chlorides and acid anhydrides. It reacts with salts of sulfurous acid (NTP, 1992).

### Conditions to avoid

no data available

### Incompatible materials

no data available

### Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /nitrogen oxides/.

## SECTION 11: Toxicological information

### Acute toxicity

- Oral: no data available

- Inhalation: no data available
- Dermal: no data available

**Skin corrosion/irritation**

no data available

**Serious eye damage/irritation**

no data available

**Respiratory or skin sensitization**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

no data available

**Reproductive toxicity**

no data available

**STOT-single exposure**

no data available

**STOT-repeated exposure**

no data available

**Aspiration hazard**

no data available

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## SECTION 12: Ecological information

**Toxicity**

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

**Persistence and degradability**

PURE CULTURE: *Mycobacterium smegmatis*, *M. vaccae*, *M. parafortuitum*, and *M. chitae* with known pyrocatechase activity were tested for their activity on epinephrine; the compound was not affected by these bacteria(1).

**Bioaccumulative potential**

An estimated BCF of 3.2 was calculated in fish for epinephrine(SRC), using a log Kow of -2.59(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

### **Mobility in soil**

Using a structure estimation method based on molecular connectivity indices(1), the Koc of epinephrine can be estimated to be 73(SRC). According to a classification scheme(2), this estimated Koc value suggests that epinephrine is expected to have high mobility in soil. The pKa1 of epinephrine is 8.28(3), indicating that this compound will partially exist in cation form in the environment and cations generally adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(4).

### **Other adverse effects**

no data available

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## **SECTION 13: Disposal considerations**

### **Disposal methods**

#### **Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### **Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## **SECTION 14: Transport information**

### **UN Number**

ADR/RID: UN2811 (For reference only, please check.)

IMDG: UN2811 (For reference only, please check.)

IATA: UN2811 (For reference only, please check.)

### **UN Proper Shipping Name**

ADR/RID: TOXIC SOLID, ORGANIC, N.O.S. (For reference only, please check.)

IMDG: TOXIC SOLID, ORGANIC, N.O.S. (For reference only, please check.)

IATA: TOXIC SOLID, ORGANIC, N.O.S. (For reference only, please check.)

### **Transport hazard class(es)**

ADR/RID: 6.1 (For reference only, please check.)

IMDG: 6.1 (For reference only, please check.)

IATA: 6.1 (For reference only, please check.)

### **Packing group, if applicable**

ADR/RID: I (For reference only, please check.)

IMDG: I (For reference only, please check.)

IATA: I (For reference only, please check.)

## Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

## Special precautions for user

no data available

## Transport in bulk according to IMO instruments

no data available

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# SECTION 15: Regulatory information

## Safety, health and environmental regulations specific for the product in question

### European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

### EC Inventory

Listed.

### United States Toxic Substances Control Act (TSCA) Inventory

Listed.

### China Catalog of Hazardous chemicals 2015

Listed.

### New Zealand Inventory of Chemicals (NZIoC)

Listed.

### PICCS

Listed.

### Vietnam National Chemical Inventory

Listed.

### IECSC

Listed.

### Korea Existing Chemicals List (KECL)

Not Listed.

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# SECTION 16: Other information

## Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

## References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.