

MATERIAL SAFETY DATA SHEET

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Version 1.3

Section 1 - Product and Company Information

Product Name	(-)-EPINEPHRINE
Product Number	E4250
Brand	SIGMA
Company	Sigma-Aldrich
Address	3050 Spruce Street SAINT LOUIS MO 63103 US
Technical Phone:	800-325-5832
Fax:	800-325-5052
Emergency Phone:	314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313 No
(-)-EPINEPHRINE	51-43-4	

Formula C9H13NO3

Synonyms Adrenaline * Adrenal * Adrenalin * l-Adrenalin * (-)-Adrenaline * l-Adrenaline * Adrenamine * Adrenan * Adrenapax * Adrenasol * Adrenine * Adrenodis * Adrenohorma * Adrenosan * Adrenutol * Adrin * Balmadren * 1,2-Benzenediol, 4-(1-hydroxy-2-(methylamino)ethyl)-, (R)- (9CI) * Bernarenin * Biorenine * Bosmin * Brevirenin * Bronkaid mist * Chelafrin * Corisol * 3,4-Dihydroxy-alpha-((methylamino)methyl)benzyl alcohol * 1-1-(3,4-Dihydroxyphenyl)-2-methylaminoethanol * Drenamist * Dylephrin * Dyspne-inhal * Epifrin * Epinefrin (Czech) * Epinefrina * Epinephran * (-)-Epinephrine * l-Epinephrine * (R)-Epinephrine * l-Epinephrine (synthetic) * l-Epirenamine * Epirenan * Epitrate * Exadrin * Glaucosan * Glycirenin * Haemostasin * Haemostatin * Hektalin * Hemisine * Hemostasin * Hemostatin * Hypernephrenin * Hyporenin * Intranefrin * Kidoline * Levorenin * Levorenine * Lyophrin * Metanephrenin * Methylarterenol * Mucidrina * Myosthenine * Mytrate * Nephridine * Nieraline * Paranephrenin * RCRA waste number P042 * Renaglandin * Renaleptine * Renalina * Renoform * Renostypticin * Renostyptin * Scurenaline * Sindrenina * Soladren * Sphymogenin * Styptirenal * Supracapsulin * Supradin * Supranefran * Supranephrene * Suprarenaline * Suprarenin * Suprel * Surrenine * Tonogen * Vasoconstrictine * Vasotonin * (R)-(-)-EPINEPHRINE

RTECS Number: D02625000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Highly Toxic (USA) Toxic (EU).

May cause harm to the unborn child. Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin.

Target organ(s): Heart. Smooth muscle.

HMIS RATING

HEALTH: 3*

FLAMMABILITY: 0

REACTIVITY: 0

NFPA RATING

HEALTH: 3

FLAMMABILITY: 0

REACTIVITY: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

EYE EXPOSURE

Assure adequate flushing of the eyes by separating the eyelids with fingers.

Section 5 - Fire Fighting Measures

FLASH POINT

N/A

AUTOIGNITION TEMP

N/A

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

EXPOSURE HAZARD(S)

Material: Irritant.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

Partition Coefficient	N/A
Decomposition Temp.	N/A
Flash Point	N/A
Explosion Limits	N/A
Flammability	N/A
Autoignition Temp	N/A
Refractive Index	N/A
Optical Rotation	Degree of Rotation: 50 g/l Solvent: 5% HCl -61.5 - -52 (+/-2)
Miscellaneous Data	N/A
Solubility	N/A

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Conditions of Instability: May decompose on exposure to light.
Materials to Avoid: Acids, Acid chlorides, Acid anhydrides,
Oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide,
Nitrogen oxides.

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Inhalation: Material is irritating to mucous membranes and upper
respiratory tract.
Multiple Routes: May be fatal if inhaled, swallowed, or absorbed
through skin. Causes eye and skin irritation.

TARGET ORGAN(S) OR SYSTEM(S)

Smooth muscle. Heart.

SIGNS AND SYMPTOMS OF EXPOSURE

Laboratory experiments in animals have shown fetotoxic results.

TOXICITY DATA

Subcutaneous

Man

7 UG/KG

LDLO

Remarks: Brain and Coverings:Other degenerative changes.

Cardiac:Other changes.

Skin

Rat

62 mg/kg

LD50

Remarks: Behavioral:Excitement. Behavioral:Convulsions or effect
on seizure threshold. Behavioral:Somnolence (general depressed
activity).

Subcutaneous

Rat

5 MG/KG

LD50

Remarks: Lungs, Thorax, or Respiration:Respiratory stimulation.

Intravenous
Rat
150 UG/KG
LD50

Intramuscular
Rat
3500 MG/KG
LD50

Intraperitoneal
Mouse
4 MG/KG
LD50

Subcutaneous
Mouse
1470 UG/KG
LD50

Intravenous
Mouse
217 UG/KG
LD50

Remarks: Skin and Appendages: Other: Hair. Behavioral:Change in motor activity (specific assay). Cardiac:Pulse rate increased without fall in BP.

Subcutaneous
Dog
5 MG/KG
LD50

Intravenous
Dog
100 UG/KG
LD50

Subcutaneous
Rabbit
4 MG/KG
LD50

Remarks: Lungs, Thorax, or Respiration:Respiratory stimulation.

Intravenous
Rabbit
50 UG/KG
LD50

Remarks: Lungs, Thorax, or Respiration:Respiratory stimulation.

CHRONIC EXPOSURE - TERATOGEN

Species: Rat
Dose: 1 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (13D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system. Effects on Embryo or Fetus: Fetal death.

Species: Rat
Dose: 10 UG/KG

Route of Application: Intravenous
Exposure Time: (20D PREG)
Result: Specific Developmental Abnormalities: Cardiovascular
(circulatory) system.

Species: Rat
Dose: 1 MG/KG
Route of Application: Intramuscular
Exposure Time: (10D PREG)
Result: Specific Developmental Abnormalities: Central nervous
system. Specific Developmental Abnormalities: Musculoskeletal
system.

Species: Hamster
Dose: 2 MG/KG
Route of Application: Subcutaneous
Exposure Time: (7-10D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal
system.

CHRONIC EXPOSURE - MUTAGEN

Species: Rat
Dose: 2500 NMOL/L
Cell Type: lung
Mutation test: DNA damage

Species: Mouse
Dose: 100 NMOL/L
Cell Type: Other cell types
Mutation test: DNA inhibition

Species: Mouse
Dose: 2500 NG/L
Cell Type: Other cell types
Mutation test: Other mutation test systems

Species: Mouse
Dose: 100 MG/L
Cell Type: lymphocyte
Mutation test: Mutation in mammalian somatic cells.

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 50 UG/KG
Route of Application: Intraperitoneal
Exposure Time: (1D MALE)
Result: Effects on Fertility: Mating performance (e.g., # sperm
positive females per # females mated; # copulations per # estrus
cycles).

Species: Rat
Dose: 6 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (7-14D PREG)
Result: Effects on Newborn: Behavioral.

Species: Rat
Dose: 2400 UG/KG
Route of Application: Subcutaneous
Exposure Time: (1-6D PREG)

Result: Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Behavioral.

Species: Rat

Dose: 5 MG/KG

Route of Application: Intramuscular

Exposure Time: (10D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat

Dose: 2 MG/KG

Route of Application: Intramuscular

Exposure Time: (10D PREG)

Result: Maternal Effects: Other effects. Nutritional and Gross Metabolic: Weight loss or decreased weight gain.

Species: Rat

Dose: 5760 UG/KG

Route of Application: Implant

Exposure Time: (14-21D PREG)

Result: Effects on Newborn: Germ cell effects (in offspring).

Species: Mouse

Dose: 16 MG/KG

Route of Application: Subcutaneous

Exposure Time: (7-10D PREG)

Result: Effects on Fertility: Other measures of fertility

Species: Rabbit

Dose: 2400 UG/KG

Route of Application: Subcutaneous

Exposure Time: (6-7D PREG)

Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea).

Species: Rabbit

Dose: 5500 UG/KG

Route of Application: Subcutaneous

Exposure Time: (3D PRE)

Result: Effects on Fertility: Other measures of fertility

Species: Rabbit

Dose: 15 MG/KG

Route of Application: Subcutaneous

Exposure Time: (15D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Rabbit

Dose: 7500 UG/KG

Route of Application: Subcutaneous

Exposure Time: (15D MALE)

Result: Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Species: Rabbit

Dose: 90 UG/KG

Route of Application: Intravaginal
Exposure Time: (1D PRE)
Result: Effects on Fertility: Other measures of fertility

Species: Hamster
Dose: 2 MG/KG
Route of Application: Subcutaneous
Exposure Time: (7-10D PREG)
Result: Effects on Fertility: Other measures of fertility

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Toxic solids, organic, n.o.s.
UN#: 2811
Class: 6.1
Packing Group: Packing Group II
Hazard Label: Toxic substances.
PIH: Not PIH

IATA

Proper Shipping Name: Toxic solid, organic, n.o.s.
IATA UN Number: 2811
Hazard Class: 6.1
Packing Group: II

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: T
Indication of Danger: Toxic.
R: 23/24/25
Risk Statements: Toxic by inhalation, in contact with skin and if swallowed.
S: 36/37/39-45
Safety Statements: Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Highly Toxic (USA) Toxic (EU).
Risk Statements: May cause harm to the unborn child. Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin.
Safety Statements: Avoid exposure - obtain special instructions before use. Do not breathe dust. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US Statements: Target organ(s): Heart. Smooth muscle.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

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. Sigma-Aldrich 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. Copyright 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.