

MATERIAL SAFETY DATA SHEET

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Version 1.5

Section 1 - Product and Company Information

Product Name ESERINE FREE BASE
Product Number E8375
Brand SIGMA

Company Sigma-Aldrich
Address 3050 Spruce Street
SAINT LOUIS MO 63103 US

Technical Phone: 800-325-5832
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Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
(-)-PHYSOSTIGMINE (ESERINE) CHOLINESTERASE INHIBITOR	57-47-6	Yes

Formula C15H21N3O2
Synonyms Carbamic acid, methyl-, ester with eseroline * CS
58525 * Eserine * Eserolein, methylcarbamate
(ester) * Fysostigmin (Czech) * MCV 4484 * NIH
10421 * (-)-Physostigmine * Physostol

RTECS Number: TJ2100000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Highly Toxic (USA) Very Toxic (EU).

Toxic in contact with skin. Very toxic by inhalation and if
swallowed.

Cholinesterase inhibitor. Target organ(s): Central nervous system.
Eyes.

HMIS RATING

HEALTH: 3*

FLAMMABILITY: 0

REACTIVITY: 1

NFPA RATING

HEALTH: 3

FLAMMABILITY: 0

REACTIVITY: 1

*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.

DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

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.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed.

SPECIAL REQUIREMENTS

Air and light sensitive.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Solid	
Property	Value	At Temperature or Pressure
Molecular Weight	275.35 AMU	
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	102 °C	
Freezing Point	N/A	
Vapor Pressure	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	N/A	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
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: 17 g/l Solvent: CHCl ₃ -91 - -77 (+/-1)	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Conditions of Instability: May discolor on exposure to light.
Conditions to Avoid: Air. Heat.
Materials to Avoid: Strong oxidizing agents Avoid contact with metals., Strong acids, Strong bases

HAZARDOUS DECOMPOSITION PRODUCTS

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

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.
Skin Absorption: Readily absorbed through skin. Toxic if absorbed through skin.
Eye Contact: May cause eye irritation.
Inhalation: May be fatal if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.
Ingestion: May be fatal if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Eyes. Blood. Heart. Central nervous system.

SIGNS AND SYMPTOMS OF EXPOSURE

Exposure can cause: Cholinesterase inhibitors can cause heavy salivation and secretion in the lungs, lachrymation, blurred vision, involuntary defecation, diarrhea, tremor, ataxia, sweating, hypothermia, lowered heart rate, and/or a fall in blood pressure as a result of their action at cholinergic nerve sites. Change in pupil size. Muscle cramps/spasms. Weakness. Fever. Dizziness. Vomiting. Nausea. Headache. Coma. Convulsions. Incoordination. Confusion. Drowsiness. Seizures.

TOXICITY DATA

Oral
Rat
4.5 mg/kg
LD50

Intraperitoneal
Rat
2 MG/KG
LD50

Oral
Mouse
3 mg/kg
LD50

Intraperitoneal
Mouse
644 UG/KG
LD50

Remarks: Behavioral:Muscle contraction or spasticity. Lungs, Thorax, or Respiration:Dyspnea. Lungs, Thorax, or Respiration:Cyanosis.

Subcutaneous

Mouse
740 UG/KG
LD50

Remarks: Behavioral:Muscle weakness. Peripheral Nerve and Sensation:Flaccid paralysis without anesthesia (usually neuromuscular blockage).

Intravenous
Mouse
400 UG/KG
LD50

Intramuscular
Mouse
330 UG/KG
LD50

Parenteral
Mouse
600 UG/KG
LD50

Intravenous
Cat
660 UG/KG
LD50

Oral
Rabbit
11.2 mg/kg
LD50

Remarks: Biochemical:Enzyme inhibition, induction, or change in blood or tissue levelsTrue cholinesterase.

Intraperitoneal
Rabbit
2470 UG/KG
LD50

Subcutaneous
Rabbit
3 MG/KG
LD50

Intravenous
Rabbit
500 UG/KG
LD50

Intramuscular
Rabbit
2200 UG/KG
LD50

Remarks: Biochemical:Enzyme inhibition, induction, or change in blood or tissue levelsTrue cholinesterase.

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 333 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: Mouse

Dose: 50 UG/KG

Route of Application: Intraperitoneal

Exposure Time: (13D PREG)

Result: Effects on Newborn: Biochemical and metabolic. Effects on Newborn: Behavioral.

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: Alkaloids, solid, n.o.s. [or]

Alkaloid salts, solid, n.o.s. [poisonous]

UN#: 1544

Class: 6.1

Packing Group: Packing Group I

Hazard Label: Toxic substances.

PIH: Not PIH

IATA

Proper Shipping Name: Alkaloids, solid, n.o.s.

IATA UN Number: 1544

Hazard Class: 6.1

Packing Group: I

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: T+

Indication of Danger: Very toxic.

R: 26/28

Risk Statements: Very toxic by inhalation and if swallowed.

S: 23-45

Safety Statements: Do not breathe vapor. 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) Very Toxic (EU).

Risk Statements: Toxic in contact with skin. Very toxic by inhalation and if swallowed.

Safety Statements: Do not breathe fumes. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US Statements: Cholinesterase inhibitor. Target organ(s):

Central nervous system. Eyes.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes

NOTES: This product is subject to SARA section 313 reporting requirements.

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: No

NDSL: Yes

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 2007 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.