

# (+)-Pseudoephedrine hydrochloride

sc-253324



The Power is Question

Material Safety Data Sheet

Hazard Alert Code Key: **EXTREME** **HIGH** **MODERATE** **LOW**

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

(+)-Pseudoephedrine hydrochloride

### STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

### NFPA



### SUPPLIER

Santa Cruz Biotechnology, Inc.  
2145 Delaware Avenue  
Santa Cruz, California 95060  
800.457.3801 or 831.457.3800

### EMERGENCY

ChemWatch  
Within the US & Canada: 877-715-9305  
Outside the US & Canada: +800 2436 2255  
(1-800-CHEMCALL) or call +613 9573 3112

### SYNONYMS

C10-H15-NO.HCl, "(1S, 2S)-(+)-pseudoephedrine hydrochloride", "(1S, 2S)-2-methylamino-1-phenylpropan-1-ol hydrochloride", "pseudoephedrine, hydrochloride L-(+)-", "benzenemethanol, alpha-(1-methylamino)ethyl)-hydrochloride, S-(R, R)-", "D-(alpha-(1-methylamino)ethyl)benzyl alcohol hydrochloride", "D-pseudoephedrine hydrochloride", "D-iso-ephedrine hydrochloride", "L-(+)-pseudoephedrine hydrochloride", Actifed, Extil, Linctifed, Novafed, Paragesic, Sinufed, Sudafed, Sudalix, "Symtom 2", Tussaphed, "alkaloid sympathomimetic decongestant"

## Section 2 - HAZARDS IDENTIFICATION

### CHEMWATCH HAZARD RATINGS

|               | Min | Max |
|---------------|-----|-----|
| Flammability: | 1   |     |
| Toxicity:     | 2   |     |
| Body Contact: | 2   |     |
| Reactivity:   | 1   |     |
| Chronic:      | 2   |     |

Min/Nil=0  
Low=1  
Moderate=2  
High=3  
Extreme=4



### CANADIAN WHMIS SYMBOLS



## EMERGENCY OVERVIEW

### RISK

Harmful if swallowed.

Irritating to eyes, respiratory system and skin.

## POTENTIAL HEALTH EFFECTS

### ACUTE HEALTH EFFECTS

#### SWALLOWED

■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

■ Adverse effects associated with the administration of central nervous system stimulants include labored breathing, coughing, narrowed airways, chest tightness, and throat spasm.

Muscular involvement may produce contraction small localized muscle fibers (visible through the skin) or seizures.

■ Ephedrine (phenylpropanolamine) and its derivatives are adrenergic agonists and may produce severe hypertensive episodes following ingestion.

Large doses may give rise to giddiness, headache, nausea, vomiting, sweating, thirst, tachycardia (rapid heart-beat), pruritus, precordial pain, palpitations, difficult urination (micturition), muscular weakness and tremors, restlessness and insomnia.

#### EYE

■ This material can cause eye irritation and damage in some persons.

#### SKIN

■ This material can cause inflammation of the skin oncontact in some persons.

■ The material may accentuate any pre-existing dermatitis condition.

■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

■ Open cuts, abraded or irritated skin should not be exposed to this material.

■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.

Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

#### INHALED

■ The material can cause respiratory irritation in some persons.

The body's response to such irritation can cause further lung damage.

■ Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual.

■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

■ Inhalation exposure may cause susceptible individuals to show change in heart beat rhythm i.

e.

■ Sympathomimetics, which mimic stimulation of the sympathetic nerves, causing a stimulatory effect on the heart and central nervous system, constriction of blood vessels supplying the skin and mucous membranes, dilation of blood vessels supplying muscles of movement, and widening of the airways.

These drugs may act on the receptor or the release of the neurotransmitter noradrenaline.

■ Stimulation of heart beta-1 adrenergic receptors may cause increased heart rate and irregularity of heartbeat, tightness and a constricting pain in the chest, palpitations and heart stoppage; low blood pressure with dizziness, fainting and flushing may also occur.

Beta-1 receptors mediate the action of sympathomimetics; beta-2 receptors control dilation of the airways.

### CHRONIC HEALTH EFFECTS

■ Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.

Prolonged administration of ephedrine (phenylpropanolamine) and its derivatives is not thought to produce cumulative effects although tolerance with dependence may occur. Individuals chronically exposed to ephedrine may experience insomnia tension, anxiety and jerky choreiform movements. Prolonged abuse of ephedrine may produce symptoms resembling schizophrenia with tachycardia, poor nutrition and hygiene, fever, cold sweats and dilated pupils. Long doses over a prolonged period may produce personality changes with a psychotic craving for the drug. Visual and auditory hallucinations have been reported in individuals with no prior psychiatric history. Ephedrine abuse may result in symptoms similar to those produced by the phenethylamines. Chronic exposure to phenethylamines may produce habituation to central nervous system stimulatory effects and tolerance requiring increased doses. Although not generally associated with significant physical dependence they may, in extreme cases, produce amphetamine-like responses including personality changes, compulsive and stereotyped behaviour and may induce toxic psychosis with auditory and visual hallucinations and paranoid delusions.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| NAME                          | CAS RN   | %   |
|-------------------------------|----------|-----|
| pseudoephedrine hydrochloride | 345-78-8 | >95 |

## Section 4 - FIRST AID MEASURES

### SWALLOWED

· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. · Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

### EYE

■ If this product comes in contact with the eyes: · Wash out immediately with fresh running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

### SKIN

■ If skin contact occurs: · Immediately remove all contaminated clothing, including footwear · Flush skin and hair with running water (and soap if available).

### INHALED

· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

### NOTES TO PHYSICIAN

■ for ephedrine (phenylpropanolamine) intoxication: Overdose management usually involves supportive and symptomatic therapy. In severe overdose the stomach should be emptied by aspiration and lavage. Diazepam may be given to control CNS stimulation and convulsions. For marked excitement or hallucination, chlorpromazine may be necessary and, in addition, its alpha-adrenoreceptor blocking properties may be useful in the management of hypertension. Severe hypertension may require phentolamine. A beta-receptor blocking agent such as propranolol may be required to control cardiac arrhythmias. MARTINDALE: The Extra Pharmacopoeia, 27th Ed.

## Section 5 - FIRE FIGHTING MEASURES

|                             |               |
|-----------------------------|---------------|
| Vapour Pressure (mmHG):     | Negligible    |
| Upper Explosive Limit (%):  | Not available |
| Specific Gravity (water=1): | Not available |
| Lower Explosive Limit (%):  | Not available |

### EXTINGUISHING MEDIA

· Water spray or fog.  
· Foam.

### FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.  
· Wear breathing apparatus plus protective gloves.

### GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

· Combustible solid which burns but propagates flame with difficulty.  
· Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.

Combustion products include: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), hydrogen chloride, phosgene, nitrogen oxides (NO<sub>x</sub>), other pyrolysis products typical of burning organic material.

May emit poisonous fumes.

May emit corrosive fumes.

### FIRE INCOMPATIBILITY

■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

### PERSONAL PROTECTION

Glasses:

Chemical goggles.

Gloves:

Respirator:

Particulate

## Section 6 - ACCIDENTAL RELEASE MEASURES

### MINOR SPILLS

· Clean up waste regularly and abnormal spills immediately.  
· Avoid breathing dust and contact with skin and eyes.  
· Wear protective clothing, gloves, safety glasses and dust respirator.  
· Use dry clean up procedures and avoid generating dust.  
· Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).  
· Dampen with water to prevent dusting before sweeping.  
· Place in suitable containers for disposal.

### MAJOR SPILLS

■ Moderate hazard.

· CAUTION: Advise personnel in area.

· Alert Emergency Responders and tell them location and nature of hazard.

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.

Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.

- Do NOT cut, drill, grind or weld such containers.

· In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

### RECOMMENDED STORAGE METHODS

- Glass container.
- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.

NOTE: Store in the dark.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

The following materials had no OELs on our records

- pseudoephedrine hydrochloride: CAS:345-78-8 CAS:670-40-6

### PERSONAL PROTECTION



### RESPIRATOR

Particulate

Consult your EHS staff for recommendations

### EYE

■ When handling very small quantities of the material eye protection may not be required.

For laboratory, larger scale or bulk handling or where regular exposure in an occupational setting occurs:

- Chemical goggles
- Face shield. Full face shield may be required for supplementary but never for primary protection of eyes
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

### HANDS/FEET

■ Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.

· Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

- Rubber gloves (nitrile or low-protein, powder-free latex). Employees allergic to latex gloves should use nitrile gloves in preference.
- Double gloving should be considered.
- PVC gloves.
- Protective shoe covers.
- Head covering.

Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.

- polychloroprene
- nitrile rubber
- butyl rubber
- fluorocautchouc
- polyvinyl chloride

Gloves should be examined for wear and/ or degradation constantly.

#### OTHER

- For quantities up to 500 grams a laboratory coat may be suitable.
- For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended. Coveralls should be buttoned at collar and cuffs.
- For quantities over 1 kilogram and manufacturing operations, wear disposable coverall of low permeability and disposable shoe covers.
- For manufacturing operations, air-supplied full body suits may be required for the provision of advanced respiratory protection.
- Eye wash unit.
- Ensure there is ready access to an emergency shower.
- For Emergencies: Vinyl suit.

#### ENGINEERING CONTROLS

- Enclosed local exhaust ventilation is required at points of dust, fume or vapor generation.
- HEPA terminated local exhaust ventilation should be considered at point of generation of dust, fumes or vapors.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Solid.

Mixes with water.

|                           |               |                                |                |
|---------------------------|---------------|--------------------------------|----------------|
| State                     | Divided solid | Molecular Weight               | 201.7          |
| Melting Range (°F)        | 359.6- 366.8  | Viscosity                      | Not Applicable |
| Boiling Range (°F)        | Not available | Solubility in water (g/L)      | Miscible       |
| Flash Point (°F)          | Not available | pH (1% solution)               | 4.5-6.0 (0.5%) |
| Decomposition Temp (°F)   | Not available | pH (as supplied)               | Not applicable |
| Autoignition Temp (°F)    | Not available | Vapour Pressure (mmHG)         | Negligible     |
| Upper Explosive Limit (%) | Not available | Specific Gravity (water=1)     | Not available  |
| Lower Explosive Limit (%) | Not available | Relative Vapor Density (air=1) | Not Applicable |
| Volatile Component (%vol) | Negligible    | Evaporation Rate               | Not Applicable |

### APPEARANCE

White crystalline powder with faint characteristic odour and bitter taste; mixes with water (1 in 1.6).

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.

### STORAGE INCOMPATIBILITY

- Avoid oxidizing agents, acids, acid chlorides, acid anhydrides.
- Avoid strong acids, bases.

Heat and light accelerate decomposition.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

pseudoephedrine hydrochloride

### TOXICITY AND IRRITATION

PSEUDOEPHEDRINE HYDROCHLORIDE:

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

| TOXICITY                                   | IRRITATION            |
|--|-----------------------|
| Oral (human) TDLo: 0.714 mg/kg             | Skin: non-Irritant ** |
| Oral (rat) LD50: ca. 1000 mg/kg** **[BASF] |                       |
| Oral (rat, male) LD50: ca. 1000 mg/kg**    | Nil Reported          |
| Oral (rat, female) LD50: ca. 464 mg/kg**   |                       |

Oral (mouse) LD50: 371 mg/kg

Inhalation (rat) LC50: >2 mg/L/4h\*\*

Intraperitoneal (mouse) LD50: 202 mg/kg

Subcutaneous (rat) LDLo: 80 mg/kg

Parenteral (mouse) LDLo: 400 mg/kg

Dermal (rat) LD50: >2000 mg/kg\*\*

Intraperitoneal (mouse) LD50: 284 mg/kg

■ Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.  
for l-pseudoephedrine hydrochloride

## Section 12 - ECOLOGICAL INFORMATION

No data

### Ecotoxicity

| Ingredient                    | Persistence:<br>Water/Soil | Persistence: Air | Bioaccumulation | Mobility |
|-------------------------------|----------------------------|------------------|-----------------|----------|
| pseudoephedrine hydrochloride | HIGH                       |                  | LOW             | HIGH     |

### GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles

Name / EHS TRN A1a A1b A1 A2 B1 B2 C1 C2 C3 D1 D2 D3 E1 E2 E3 Cas No / RTECS No \_\_\_\_\_ / \_\_\_\_\_  
\_\_\_\_\_ Alcoholic 293 85 0 0 0 R 0 0 0 0 0 1 D 1 beverages / CAS:345- 78- 8 /

Legend: EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships)  
NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradation, B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/kg), C2=Acute mammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corrosion, D2=Eye irritation & corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interference with coastal amenities, For column A2: R=Readily biodegradable, NR=Not readily biodegradable. For column D3: C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic. For column E1: NT=Not tainting (tested), T=Tainting test positive. For column E2: Fp=Persistent floater, F=Floater, S=Sinking substances. The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard. (GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

## Section 13 - DISPOSAL CONSIDERATIONS

### Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

! Puncture containers to prevent re-use and bury at an authorized landfill.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

## Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

**pseudoephedrine hydrochloride (CAS: 345-78-8,670-40-6) is found on the following regulatory lists;**  
"Canada Domestic Substances List (DSL)", "US Toxic Substances Control Act (TSCA) - Inventory"

## Section 16 - OTHER INFORMATION

### ND

Substance CAS Suggested codes pseudoephedrine hydrochloride 345- 78- 8 pseudoephedrine hydrochloride 670- 40- 6

### Ingredients with multiple CAS Nos

Ingredient Name CAS pseudoephedrine hydrochloride 345-78-8, 670-40-6

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■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:  
[www.chemwatch.net/references](http://www.chemwatch.net/references).

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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