

## Material Safety Data Sheet

Conforms to 93/112/EC and ISO 11014-1

Responsible Name MSDS Administrator

**? Section 1. Chemical Product and Company Identification****Product Name** Bestatin; N-[(2S,3R)-3-Amino-2-hydroxy-4-phenylbutyryl]-L-Leucine**Product no.** 78433 1892435**Supplier** In USA:  
Thermo Fisher Scientific  
P.O. Box 117  
Rockford, IL 61105  
USA  
815.968.0747 or  
1.800.874.3723In Europe:  
Perbio Science  
Industriezone III  
Industrielaan 27  
9320 Erembodegem-Aalst  
Belgium  
Tel:+32 53 83 44 04  
Fax:+32 53 83 76 38**Manufacturer** Pierce  
3747 N. Meridian Road  
P.O. Box 117  
Rockford, IL 61105  
USA  
815.968.0747 or  
1.800.874.3723  
(815)968-7316 fax  
www.thermo.com**In case of emergency** CHEMTREC:  
800.424.9300  
OUTSIDE US:  
703.527.3887**Print date** 4/11/2007**Validation date** 4/11/2007**MSDS#** 7603**Synonyms** Ubenimex**Use of the substance/preparation** Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.**Section 2. Composition, Information on Ingredients****Substance/preparation** : Substance

<u>Ingredient name</u>	<u>CAS number</u>	<u>%</u>	<u>EC number</u>	<u>Classification</u>
Bestatin; N-[(2S,3R)-3-Amino-2-hydroxy-4-phenylbutyryl]-L-Leucine	58970-76-6	98 - 100	261-529-2	Xi; R36/37/38

**Section 3. Hazards identification****United States** Review the most current and approved institutional guideline, protocol, standard operating procedure(s) and MSDS(s) for the proper handling of institutional materials/equipment associated with the use of this product.**Emergency overview** Warning!

CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

Avoid contact with skin and clothing. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

**Routes of entry** Dermal contact. Eye contact. Inhalation. Ingestion.**Potential acute health effects****Eyes** Irritating to eyes.**Skin** Irritating to skin.**Inhalation** Irritating to respiratory system.**Ingestion** No known significant effects or critical hazards.**Potential chronic health effects****Carcinogenic effects****CARCINOGENIC EFFECTS:** Classified None. by OSHA, None. by NIOSH.**MUTAGENIC EFFECTS:** Not available.**TERATOGENIC EFFECTS:** Not available.**Medical conditions aggravated by overexposure**

Repeated or prolonged exposure is not known to aggravate medical condition.

**Over-exposure signs/symptoms**

Not available.

**Continued on Next Page**

**Europe**

<b>Classification</b>	<b>X<sub>i</sub>; R36/37/38</b>
<b>Physical/chemical hazards</b>	Not applicable.
<b>Human health hazards</b>	Irritating to eyes, respiratory system and skin.
<b>Environmental hazards</b>	Not applicable.

See toxicological Information (section 11)

## **+ Section 4. First aid measures**

**Notice to reader** Get immediate medical attention.

**Effects and symptoms**

<b>Inhalation</b>	Hazardous in case of inhalation (lung irritant).
<b>Ingestion</b>	Not available.
<b>Skin contact</b>	Hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
<b>Eye contact</b>	Hazardous in case of eye contact (irritant).
<b>Aggravating conditions</b>	Repeated or prolonged exposure is not known to aggravate medical condition.

**First-Aid measures**

<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
<b>Ingestion</b>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
<b>Skin contact</b>	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
<b>Eye contact</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
<b>Notes to physician</b>	Not available.
<b>Protection of first-aiders</b>	Not available.

## **🔥 Section 5. Fire fighting measures**

<b>Flammability of the product</b>	May be combustible at high temperature.
<b>Flash Points</b>	Not available.
<b>Fire hazards in presence of various substances</b>	Not available.
<b>Fire fighting media and instructions</b>	Use an extinguishing agent suitable for surrounding fires.
<b>Protective clothing (fire)</b>	Be sure to use an approved/certified respirator or equivalent.
<b>Hazardous thermal decomposition products</b>	These products are carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NO, NO <sub>2</sub> ...).

## **Section 6. Accidental release measures**

<b>Personal precautions</b>	Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
<b>Environmental precautions and clean-up methods</b>	Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.
<b>Small spill and leak</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Continued on Next Page**

## ◆ Section 7. Handling and storage

**Handling** Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling.

**Storage** Keep container tightly closed. Keep container in a cool, well-ventilated area.

**Intended Use** Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

**Packaging materials**

**Suitable / Not suitable** Use original container.

## Section 8. Exposure Controls, Personal Protection

**Engineering Controls** Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

### Exposure Limit Values

#### Ingredient Name

#### Occupational Exposure Limits

United States

### Personal Protection

**Eyes** Splash goggles.

**Body** Lab coat.

**Hands** Gloves.

**Respiratory** Respirator is not needed under normal and intended conditions of use, if exposures are kept below established limits.

Protective Clothing  
(Pictograms)



## 🧪 Section 9. Physical and chemical properties

**Physical State** Solid. (Powdered solid.)

**Color** White.

**Odor** Not available.

**Molecular weight** 308.37 g/mole

**Taste** Not available.

**Molecular formula** C<sub>16</sub>H<sub>24</sub>N<sub>2</sub>O<sub>4</sub>

**Melting/freezing point** 233 to 236°C (451.4 to 456.8°F)

**Dispersion properties** See solubility in water, methanol.

**Solubility** Soluble in methanol.  
Very slightly soluble in cold water, hot water.

## 🧪 Section 10. Stability and reactivity

**Stability and Reactivity** The product is stable.

**Conditions to avoid** Not available.

**Materials to avoid** Reactive with oxidizing agents.

**Hazardous polymerization** Will not occur.

**Hazardous Decomposition Products** Not available.

**Continued on Next Page**

 **Section 11. Toxicological information**

**Toxicity to Animals** **Bestatin; N-[(2S,3R)-3-Amino-2-hydroxy-4-phenylbutyryl]-L-Leucine**  
LD50: Not available.  
LC50: Not available.

**Chronic Effects on Humans** **☑ CARCINOGENIC EFFECTS:** Classified None. by OSHA, None. by NIOSH.

**Other Toxic Effects on Humans** ☑ Hazardous in case of eye contact (irritant), of inhalation (lung irritant).

**Special Remarks on Toxicity to Animals** Not available.

**Special Remarks on Chronic Effects on Humans** Can cause CNS depression.

**Special Remarks on Other Toxic Effects on Humans** Not available.

**Carcinogenicity** No known significant effects or critical hazards.

**Mutagenicity** No known significant effects or critical hazards.

**Reproductive toxicity** No known significant effects or critical hazards.

Over-exposure signs/symptoms

**Inhalation** No known significant effects or critical hazards.

**Ingestion** No known significant effects or critical hazards.

**Skin** No known significant effects or critical hazards.

 **Section 12. Ecological information**

**Mobility** Not available.

**Persistence/degradability** Not available.

**Bioaccumulative potential** Not available.

**Ecotoxicity** Not available.

**Germany water class** VCI WGK: No products were found.

Ecotoxicity data

<u>Ingredient name</u>	<u>Species</u>	<u>Period</u>
------------------------	----------------	---------------

Other ecological information

<u>Ingredient name</u>	<u>BOD<sub>5</sub></u>	<u>COD</u>
------------------------	------------------------	------------

<u>Ingredient name</u>	<u>Aquatic half-life</u>	<u>Photolysis</u>
------------------------	--------------------------	-------------------

<u>Bioaccumulative potential</u>	<u>LogP<sub>ow</sub></u>	<u>BCF</u>
----------------------------------	--------------------------	------------

**Mobility** : Not available.

**Other adverse effects** : No known significant effects or critical hazards.



### Section 13. Disposal considerations

**Waste Stream** Not available.

**Methods of disposal** The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

**European waste catalogue (EWC)** Not available.

**Hazardous waste** The classification of the product may meet the criteria for a hazardous waste

**Denmark – Carcinogenic waste** Not available.

**Denmark - Waste card number** Not available.

**Denmark - Waste group** Not available.

**Sweden - thermoset plastic waste** Not available.

**Sweden - Waste group** Not available.

**Austria - Waste catalogue** Not available.

**Norway - Waste number** Not available.

**Norway - Hazardous waste** The classification of the product may meet the criteria for a hazardous waste

**Switzerland - Waste code** Not available.

### Section 14. Transport information

Contact the supplier for all information regarding the proper transportation method for this material.



### Section 15. Regulatory information

#### Label Requirements (Europe)

R36/37/38- Irritating to eyes, respiratory system and skin.  
S2- Keep out of the reach of children.



Irritant

**HCS Classification** Irritating material

**U.S. Federal Regulations** TSCA: No products were found.

Continued on Next Page

# Bestatin; N-[(2S,3R)-3-Amino-2-hydroxy-4-phenylbutyryl]-L-Leucine

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.  
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.

**State regulations** No products were found.

**WHMIS (Canada)** Not controlled under WHMIS (Canada).

---

No products were found.

## International Regulations

**EINECS** Not available.

---

**DSCL (EEC)** R36/37/38- Irritating to eyes, respiratory system and skin.

**International Lists** No products were found.

**State Regulations** No products were found.

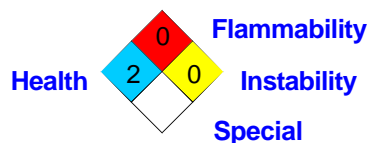
---

## Section 16. Other information

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

Health	1
Fire hazard	0
Reactivity	0
Personal protection	C

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



**References** Not available.

**History of Document Changes** Any information changes since last document version are marked with a triangle symbol.

**Full text of R phrases referred to in sections 2 and 3 - Europe** R36/37/38- Irritating to eyes, respiratory system and skin.

**Full text of classifications referred to in sections 2 and 3 - Europe** Xi - Irritant

**Intended Use** Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

---

Validated by MSDS Administrator on 4/11/2007.

Verified by MSDS Administrator.

Date of previous issue 3/26/2007

Printed 4/11/2007.

Version

2.01

### 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.*