



## MATERIAL SAFETY DATA SHEET

### 1. Product and company identification

|                       |                                                                                                                          |                                                                                                                                         |   |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Product name</b>   | : NKH 477                                                                                                                | <b>Emergency</b>                                                                                                                        | : |
| <b>Catalog number</b> | : sc-204130                                                                                                              |                                                                                                                                         |   |
| <b>Supplier</b>       | : Santa Cruz Biotechnology, Inc.<br>2145 Delaware Avenue<br>Santa Cruz, California 95060<br>800.457.3801 or 831.457.3800 | ChemWatch<br>Within the US & Canada: 877-715-9305<br>Outside the US & Canada: +800 2436 2255<br>(1-800-CHEMCALL) or call +613 9573 3112 |   |

### 2. Hazards identification

|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Emergency overview</b>                                      | : DANGER!<br>MAY BE FATAL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.<br>MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: REPRODUCTIVE SYSTEM,<br>DIGESTIVE SYSTEM, CARDIOVASCULAR SYSTEM, RESPIRATORY TRACT,<br>ENDOCRINE SYSTEM, SKIN, EYES, CENTRAL NERVOUS SYSTEM.<br>Do not ingest. Do not get in eyes or on skin or clothing. Use only with adequate<br>ventilation. Keep container tightly closed and sealed until ready for use. Wash<br>thoroughly after handling. |
| <b>Physical state</b>                                          | : Solid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>OSHA/HCS status</b>                                         | : This material is considered hazardous by the OSHA Hazard Communication Standard<br>(29 CFR 1910.1200).                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Routes of entry</b>                                         | : Dermal contact. Eye contact. Inhalation. Ingestion.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Inhalation</b>                                              | : Very toxic by inhalation. Exposure to decomposition products may cause a health<br>hazard. Serious effects may be delayed following exposure.                                                                                                                                                                                                                                                                                                                          |
| <b>Ingestion</b>                                               | : Very toxic if swallowed.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Skin</b>                                                    | : Very toxic in contact with skin.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Eyes</b>                                                    | : No known significant effects or critical hazards.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Potential chronic health effects</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Carcinogenicity</b>                                         | : No known significant effects or critical hazards.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Mutagenicity</b>                                            | : No known significant effects or critical hazards.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Teratogenicity</b>                                          | : No known significant effects or critical hazards.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Developmental effects</b>                                   | : No known significant effects or critical hazards.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Fertility effects</b>                                       | : No known significant effects or critical hazards.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Target organs</b>                                           | : May cause damage to the following organs: the reproductive system, digestive system,<br>cardiovascular system, upper respiratory tract, endocrine, skin, eyes, central nervous<br>system (CNS).                                                                                                                                                                                                                                                                        |
| <b>Medical conditions<br/>aggravated by over-<br/>exposure</b> | : Pre-existing disorders involving any target organs mentioned in this MSDS as being at<br>risk may be aggravated by over-exposure to this product.                                                                                                                                                                                                                                                                                                                      |

See toxicological information (section 11)

### 3. Composition/information on ingredients

| <u>Code</u> | <u>Name</u>                                                                                                                                                                                                                                            | <u>CAS number</u> | <u>% by weight</u> |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| 344281      | beta-alanine, n,n-dimethyl-, 5-(acetyloxy)-3-ethenyldodecahydro-10,10b-<br>dihydroxy-3,4a,7,7,10a-pentamethyl-1-oxo-1h-naphtho(2,1-b)pyran-6-yl<br>ester, hydrochloride,(3r-(3-alpha,4a-beta,5-beta,6-beta,6a-alpha,10-<br>alpha,10a-beta,10b-alpha))- | 138605-00-2       | 100                |

## 4 . First aid measures

- Eye contact** : Call medical doctor or poison control center immediately. Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : Call medical doctor or poison control center immediately. 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. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Call medical doctor or poison control center immediately. Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Call medical doctor or poison control center immediately. Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

## 5 . Fire-fighting measures

- Flammability of the product** : No specific fire or explosion hazard.
- Extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
nitrogen oxides  
halogenated compounds
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## 6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**
- Spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

## 7 . Handling and storage

- Handling** : Do not get in eyes or on skin or clothing. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container, protected from direct sunlight. Keep container tightly closed and sealed until ready for use.

## 8 . Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

|                                        |                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Engineering measures</b>            | : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.                                                                                                                                                                     |
| <b>Hygiene measures</b>                | : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location. |
| <b>Personal protection</b>             |                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Respiratory</b>                     | : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.                                                                     |
| <b>Hands</b>                           | : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.                                                                                                                                                                                             |
| <b>Eyes</b>                            | : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.                                                                                                                                                                                                          |
| <b>Skin</b>                            | : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.                                                                                                                                                                                         |
| <b>Environmental exposure controls</b> | : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.                                                                |

## 9 . Physical and chemical properties

|                                   |                                |
|-----------------------------------|--------------------------------|
| <b>Component name</b>             | : 344281                       |
| <b>Physical state</b>             | : Solid.                       |
| <b>Color</b>                      | : White.                       |
| <b>Odor</b>                       | : Not available.               |
| <b>Molecular weight</b>           | : 546.1 g/mole                 |
| <b>Molecular formula</b>          | : $C_{27}H_{43}NO_8 \cdot HCl$ |
| <b>pH</b>                         | : Not available.               |
| <b>Boiling/condensation point</b> | : Not available.               |
| <b>Melting/freezing point</b>     | : Not available.               |
| <b>Relative density</b>           | : Not available.               |
| <b>Vapor pressure</b>             | : Not available.               |
| <b>Vapor density</b>              | : Not available.               |
| <b>Odor threshold</b>             | : Not available.               |
| <b>Evaporation rate</b>           | : Not available.               |

## 10 . Stability and reactivity

|                                           |                                                                                                        |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Chemical stability</b>                 | : The product is stable.                                                                               |
| <b>Possibility of hazardous reactions</b> | : Under normal conditions of storage and use, hazardous reactions will not occur.                      |
| <b>Hazardous polymerization</b>           | : Under normal conditions of storage and use, hazardous polymerization will not occur.                 |
| <b>Conditions to avoid</b>                | : No specific data.                                                                                    |
| <b>Hazardous decomposition products</b>   | : Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

## 11 . Toxicological information

### Acute toxicity

#### Product/ingredient name

beta-alanine, n,n-dimethyl-, 5-(acetyloxy)-3-ethenyldodecahydro-10,10b-dihydroxy-3,4a,7,7,10a-pentamethyl-1-oxo-1h-naphtho(2,1-b)pyran-6-yl ester, hydrochloride, (3r-(3-alpha,4a-beta,5-beta,6-beta,6a-alpha,10-alpha,10a-beta,10b-alpha))-

#### Test Route

LD50 Intravenous

#### Species

Rat

#### Result

6100 ug/kg

LD50 Oral

Rat

12900 ug/kg

### Carcinogenicity

No known significant effects or critical hazards.

### Mutagenicity

No known significant effects or critical hazards.

### Teratogenicity

No known significant effects or critical hazards.

## 12 . Ecological information

**Environmental effects** : No known significant effects or critical hazards.

## 13 . Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

## 14 . Transport information

| Regulatory information | UN number | Proper shipping name                             | Classes | PG* | Label                                                                                 | Additional information |
|------------------------|-----------|--------------------------------------------------|---------|-----|---------------------------------------------------------------------------------------|------------------------|
| DOT Classification     | UN2811    | Toxic solid, organic, n.o.s. (Forskolin, NKH477) | 6.1     | II  |  | -                      |
| IATA-DGR Class         | UN2811    | Toxic solid, organic, n.o.s. (Forskolin, NKH477) | 6.1     | II  |  |                        |

PG\* : Packing group

## 15 . Regulatory information

### United States

#### HCS Classification

: Highly toxic material  
Target organ effects

#### U.S. Federal regulations

: **TSCA 8(b) inventory:** This product is being sent to you as a Research and Development product as defined by the Toxic Substances Act (TSCA) of 1976. Due to TSCA's R&D exemption, this product is not listed on the U.S. EPA's Toxic Substances Control Act (TSCA's) inventory. As a TSCA exempt R&D substance, this product must be used by or directly under the supervision of a technically qualified individual(s) as defined by TSCA. This product may not be used for commercial purposes or in formulations used for commercial purposes.

**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.

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

#### Canada

**WHMIS (Canada)** : Class D-1A: Material causing immediate and serious toxic effects (Very toxic).

**Canadian lists** : **CEPA Toxic substances:** This material is not listed.  
**Canadian ARET:** This material is not listed.  
**Canadian NPRI:** This material is not listed.  
**Alberta Designated Substances:** This material is not listed.  
**Ontario Designated Substances:** This material is not listed.  
**Quebec Designated Substances:** This material is not listed.

**CEPA DSL / CEPA NDSL** : Not determined.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

#### EU regulations

**Hazard symbol or symbols** : 

**Risk phrases** : R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed.

**Safety phrases** : S22- Do not breathe dust.  
S24/25- Avoid contact with skin and eyes.  
S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.  
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

#### International regulations

**International lists** : **Australia inventory (AICS):** Not determined.  
**China inventory (IECSC):** Not determined.  
**Japan inventory (ENCS):** Not determined.  
**Japan inventory (ISHL):** Not determined.  
**Korea inventory (KECI):** Not determined.  
**New Zealand Inventory of Chemicals (NZIoC):** Not determined.  
**Philippines inventory (PICCS):** Not determined.

## 16 . Other information

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

|                  |   |
|------------------|---|
| Health           | 4 |
| Flammability     | 0 |
| Physical hazards | 0 |
|                  |   |

**Caution:** HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

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



#### Notice to reader

*The above information is believed to be correct but does not purport to be complete and should be used only as a guide. The burden of safe use of this material rests entirely with the user.*