

# D- $\alpha$ -Tocopheryl Succinate

sc-200141



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

D- $\alpha$ -Tocopheryl Succinate

### 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

C33-H54-O5, "2, 5, 7, 8 tetramethyl-2-(4', 8', 12' -trimethyltridecyl)-6-chromanol, ", succinate, "vitamin E succinate", "alpha-tocopherol acid succinate", "2H-1-benzopyran-6-ol, 3, 4-dihydro-2, 5, 7, 8-tetramethyl-2-(4, 8, 12-", "trimethyltridecyl)-, succinate", "(+)-alpha-tocopherol succinate", "(2R, 4' R, 8' R)-alpha-tocopheryl succinate", "(R, R, R)-alpha-tocopherol succinate"

## 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

Irritating to eyes and skin.

Repeated exposure may cause skin dryness and cracking.

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### POTENTIAL HEALTH EFFECTS

### ACUTE HEALTH EFFECTS

#### SWALLOWED

■ Accidental ingestion of the material may be damaging to the health of the individual.

■ Vitamin E is a fat-soluble vitamin that acts as an antioxidant and free radical scavenger in lipophilic environments and is consumed by approximately 20% of the US population. It requires bile for absorption, and 25% of the vitamin is absorbed orally. Storage of the vitamin occurs in adipose tissue, liver, and muscle. The US recommended dietary allowance is 30 mg/day. Adults receiving 2-3 gm/day of Vitamin E developed skin rashes and mild gastrointestinal irritation with diarrhoea; 1 gm/day was tolerated for months with apparent ill-effect.

The oral median lethal dose found in several species is 2 gm/kg, and adverse effects usually are observed at doses greater than 1 gm/kg, which is equivalent to 200-500 mg/kg in humans. Most deleterious effects have been observed in small studies and in case reports.

High doses (800 IU/day) of Vitamin E (tocopherol) may produce fatigue and weakness. The symptoms resolve with removal of the drug. Another study reported emotional disturbances in several women taking the same dosages. These symptoms have not been observed in other large series. Transient nausea and gastric distress have been observed in a few patients taking high dosages of vitamin E, 2000-2500 IU/day. Diarrhea and intestinal cramps have been reported at a dosage of 3200 IU/day. Other nonspecific adverse effects, which have been reported rarely, include fatigue, muscle weakness, delayed wound healing, and headache.

Thyroid hormone levels of triiodothyronine and thyroxine were decreased in healthy students administered 600 IU/day. Similar findings have been observed in animal studies.

#### EYE

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

#### SKIN

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

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

■ Skin contact is not thought to have harmful health effects, however the material may still produce health damage following entry through wounds, lesions or abrasions.

■ Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.

■ 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 is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified using animal models). Nevertheless, adverse effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

■ 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.

■ Not normally a hazard due to non-volatile nature of product.

### CHRONIC HEALTH EFFECTS

■ Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.

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.

<p>

Premature infants with low birthweight have shown life-threatening adverse effects from vitamin E. Sepsis and necrotizing enterocolitis have occurred only in premature infants with low birthweight. A syndrome of ascites, hepatomegaly, and thrombocytopenia resulting in death occurred in the 1980s in association with an intravenous vitamin E preparation used in premature infants with low birthweight. Presumably, the cause was a polysorbate carrier of the vitamin, and the syndrome has not occurred since its removal.

An increased risk of sepsis occurred in one clinical trial (14% vs 6%) of premature neonates with a birth weight less than 1500 g to whom vitamin E was administered. When high-dose vitamin E of up to 30 mg/kg/d was administered to this population to prevent retrolental fibroplasia, necrotizing enterocolitis occurred. Incidence of necrotizing enterocolitis increased 2-fold (12%) in 2 studies; however, others have shown no difference. These findings may be secondary to the compounding effects of prematurity and the effect of the vitamin on the immune system. No other population has demonstrated these findings.

One study has shown that alpha-tocopherol, at dosages of 50 mg/d, increased the risk of subarachnoid hemorrhage by 50% (95% confidence interval [CI], P = 0.07) and fatal subarachnoid hemorrhage by 181% (95% CI, P = 0.01) in men aged 50-69 years who smoked cigarettes compared to placebo. The risk of cerebral infarction was decreased 14% in the same patients. These results have not been found in any previous studies.

### Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
D-alpha-tocopherol succinate	4345-03-3	99
<a href="#">alpha-tocopherol</a>	59-02-9	1
heavy metals, maximum		20 ppm
<a href="#">lead</a>	7439-92-1	trace ^
typically 10 ppm		
<a href="#">arsenic</a>	7440-38-2	trace ^
typically 3 ppm		

### Section 4 - FIRST AID MEASURES

#### SWALLOWED

· If swallowed do NOT induce vomiting. · If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

#### 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. · Other measures are usually unnecessary.

#### NOTES TO PHYSICIAN

■ Treat symptomatically.

### Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not Available
Upper Explosive Limit (%):	Not available.
Specific Gravity (water=1):	<1
Lower Explosive Limit (%):	Not available.

#### EXTINGUISHING MEDIA

· Foam.  
· Dry chemical powder.

#### 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>), other pyrolysis products typical of burning organic material.  
May emit clouds of acrid smoke.  
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:  
Type A-P Filter of sufficient capacity

### Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable, labelled container for waste 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

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

### STORAGE REQUIREMENTS

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

Store below 25 deg.C.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA mg/m <sup>3</sup>	Notes
US ACGIH Threshold Limit Values (TLV)	alpha-tocopherol (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)	10	See Appendix B current TLV/BEI Book
US - California Permissible Exposure Limits for Chemical Contaminants	alpha-tocopherol (Particulates not otherwise regulated Respirable fraction)	5	(n)
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	alpha-tocopherol (Particulates not otherwise regulated Respirable fraction)	5	
US - Michigan Exposure Limits for Air Contaminants	alpha-tocopherol (Particulates not otherwise regulated, Respirable dust)	5	
Canada - Prince Edward Island Occupational Exposure Limits	alpha-tocopherol (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)	10	See Appendix B current TLV/BEI Book
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	alpha-tocopherol (Particulates not otherwise regulated (PNOR)(f)-Respirable fraction)	5	

#### ENDOELTABLE

The following materials had no OELs on our records

- D-alpha-tocopherol succinate: CAS:4345-03-3

### PERSONAL PROTECTION



#### RESPIRATOR

Type A-P Filter of sufficient capacity

Consult your EHS staff for recommendations

## EYE

- Safety glasses with side shields.
- Chemical goggles.

## 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.

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

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

## ENGINEERING CONTROLS

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Does not mix with water.

Floats on water.

State	Divided Solid	Molecular Weight	530.78
Melting Range (°F)	167	Viscosity	Not Available
Boiling Range (°F)	Not Applicable	Solubility in water (g/L)	Immiscible
Flash Point (°F)	Not available.	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not available.	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available.	Vapour Pressure (mmHG)	Not Available
Upper Explosive Limit (%)	Not available.	Specific Gravity (water=1)	<1
Lower Explosive Limit (%)	Not available.	Relative Vapor Density (air=1)	Not applicable.
Volatile Component (%vol)	Not Available	Evaporation Rate	Not available

### APPEARANCE

White to yellow-white crystalline powder. No odour. Soluble in vegetable oils, alcohol, ether, acetone.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

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

### STORAGE INCOMPATIBILITY

- Avoid strong acids, bases.
  - Protect from light.
- Avoid reaction with oxidizing agents.

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

## Section 11 - TOXICOLOGICAL INFORMATION

D-ALPHA-TOCOPHEROL SUCCINATE

### TOXICITY AND IRRITATION

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

D-ALPHA-TOCOPHEROL SUCCINATE:

TOXICITY	IRRITATION
Oral (Rat) LD50: 7001 mg/kg for DL-form	
TOXICITY	IRRITATION
<b>ALPHA-TOCOPHEROL:</b>	
Oral (Rat) LD50: 15000 mg/kg *	Skin (rabbit): Irritant *
Oral (mouse) LD50: 49700 mg/kg	Skin : Moderate
Oral (mouse) LD50: 49700 mg/kg	
Oral (Mouse) LD50: 5000 mg/kg *	

■ NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.

[ROCHE]

Use in foodstuffs is consistent with low order of toxicity.

## Section 12 - ECOLOGICAL INFORMATION

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
D-alpha-tocopherol succinate	HIGH		LOW	LOW
alpha-tocopherol	HIGH		LOW	LOW

## Section 13 - DISPOSAL CONSIDERATIONS

### Disposal Instructions

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

! 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

D-alpha-tocopherol succinate (CAS: 4345-03-3) is found on the following regulatory lists;

"Canada Domestic Substances List (DSL)", "US Cosmetic Ingredient Review (CIR) Cosmetic ingredients found safe as used", "US Food Additive Database", "US Toxic Substances Control Act (TSCA) - Inventory" Regulations for ingredients

**alpha-tocopherol (CAS: 59-02-9, 10191-41-0) is found on the following regulatory lists;**

"Canada Domestic Substances List (DSL)", "International Fragrance Association (IFRA) Survey: Transparency List", "US Cosmetic Ingredient Review (CIR) Cosmetic ingredients found safe as used", "US EPA High Production Volume Program Chemical List", "US Toxic Substances Control Act (TSCA) - Inventory", "US TSCA Section 8 (a) Inventory Update Rule (IUR) - Partial Exemptions"

## Section 16 - OTHER INFORMATION

### LIMITED EVIDENCE

- Ingestion may produce health damage\*.
- Cumulative effects may result following exposure\*.

\* (limited evidence).

### ND

Substance CAS Suggested codes D- alpha- tocopherol succinate 4345- 03- 3 alpha- tocopherol 59- 02- 9 alpha- tocopherol 10191- 41- 0

### Ingredients with multiple CAS Nos

Ingredient Name CAS alpha-tocopherol 59-02-9, 10191-41-0

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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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