

# Boric acid-d3

sc-358850



The Power is Question

## Material Safety Data Sheet

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

### Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

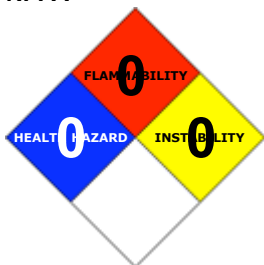
#### PRODUCT NAME

Boric acid-d3

#### 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

BO3D3, B(OH)3, "boracic acid", Borofax, "hydrogen borate", "orthoboric acid", "trioxoboric (III) acid", APS, TECH00005138, BP00004219, AR00000101, UL00000942, UL00000102, TECH00000934, "Redox BOACID70"

### Section 2 - HAZARDS IDENTIFICATION

#### CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	0	
Toxicity:	2	
Body Contact:	1	
Reactivity:	0	
Chronic:	3	

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



#### CANADIAN WHMIS SYMBOLS



## EMERGENCY OVERVIEW

### RISK

May impair fertility.

May cause harm to the unborn child.

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

#### SWALLOWED

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

■ The substance and/or its metabolites may bind to hemoglobin inhibiting normal uptake of oxygen.

This condition, known as "methemoglobinemia", is a form of oxygen starvation (anoxia).

■ Ingestion or percutaneous absorption of boric acid causes nausea, abdominal pain, diarrhoea and violent vomiting, sometimes bloody, which may be accompanied by headache and weakness, and characteristic erythematous (abnormally red) lesions on the skin.

In severe cases, shock with fall in arterial pressure, tachycardia (increase in heart rate) and cyanosis (blue skin colour) may occur.

■ Borate poisoning causes nausea, vomiting, diarrhea and pain in the upper abdomen.

Often persistent vomiting occurs, and there may be blood in the feces.

#### EYE

■ Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn).

Slight abrasive damage may also result.

#### SKIN

■ The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models).

Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

■ Boric acid is not absorbed through intact skin but is readily absorbed through areas of damaged, abraded, burned skin, areas of active dermatitis.

■ Irritation and skin reactions are possible with sensitive skin.

■ 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 respiratory irritation (as classified using animal models).

Nevertheless inhalation of dusts, or fume, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.

■ 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.

■ Borates, as represented by borax, may act as simple respiratory irritants.

In a study of the respiratory effects of borax dust on active borax workers, the incidence of respiratory symptoms, pulmonary function and abnormalities of chest radiographs were related to estimated exposures.

■ Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.

■ Inhalation of small amounts of dust or fume over long periods may cause poisoning.

#### CHRONIC HEALTH EFFECTS

■ Ample evidence exists from experimentation that reduced human fertility is directly caused by exposure to the material.

Ample evidence exists, from results in experimentation, that developmental disorders are directly caused by human exposure to the material.

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.

Chronic boric acid poisoning is characterized by mild gastrointestinal irritation, loss of appetite, disturbed digestion, nausea, possibly vomiting and a hard blotchy rash. Dryness of skin, reddening of tongue, loss of hair, conjunctivitis, and kidney injury have also been reported.

[Occupational Diseases].

Borate can accumulate in the testes and deplete germ cells and cause withering of the testicles, according to animal testing. Hair loss, skin inflammation, stomach ulcer and anemia can all occur.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
boric acid	14149-58-7	>99

## 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 or hair contact occurs: · Flush skin and hair with running water (and soap if available). · Seek medical attention in event of irritation.

#### **INHALED**

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

#### **NOTES TO PHYSICIAN**

■ The material may induce methemoglobinemia following exposure.

· Initial attention should be directed at oxygen delivery and assisted ventilation if necessary. Hyperbaric oxygen has not demonstrated substantial benefits.

· Hypotension should respond to Trendelenburg's position and intravenous fluids; otherwise dopamine may be needed.

For acute or repeated short term exposures to boron and its compounds:

· Nausea, vomiting, diarrhea and epigastric pain, hematemesis and blue-green discoloration of both feces and vomitus characterize adult boron intoxication.

· Access and correct any abnormalities found in airway and circulation.

### **Section 5 - FIRE FIGHTING MEASURES**

Vapour Pressure (mmHG): Not applicable.

Upper Explosive Limit (%): Not applicable

Specific Gravity (water=1): 1.44-1.5128

Lower Explosive Limit (%): Not applicable

#### **EXTINGUISHING MEDIA**

· There is no restriction on the type of extinguisher which may be used.

Use extinguishing media suitable for surrounding area.

#### **FIRE FIGHTING**

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

· Wear breathing apparatus plus protective gloves for fire only.

#### **GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS**

· Non combustible.

· Not considered to be a significant fire risk, however containers may burn.

May emit poisonous fumes.

Is a fire retardant.

#### **FIRE INCOMPATIBILITY**

■ None known.

#### **PERSONAL PROTECTION**

Glasses:

Chemical goggles.

Gloves:

1.NEOPRENE 2.NITRILE 3.VITON

Respirator:

Particulate

### **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.

#### **RECOMMENDED STORAGE METHODS**

■ for boric acid:

Storage bins should have a 60-degree sloping cone bottom with a provision to prevent the entry of water.

For DRY storage:

- Plastic drum
- Polyethylene or polypropylene container
- Steel drum
- Aluminium drum

For MOIST conditions:

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

### STORAGE REQUIREMENTS

- Observe manufacturer's storing and handling recommendations.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC	Notes
US ACGIH Threshold Limit Values (TLV)	boric acid (Boric acid)		2		6				TLV Basis/Critical Effect(s): irritation (eyes, nose, respiratory tract, skin); reproductive; developmental
Canada - Prince Edward Island Occupational Exposure Limits	boric acid (Boric acid)		2		6				TLV Basis/Critical Effect(s): irritation (eyes, nose, respiratory tract, skin); reproductive; developmental
Canada - Nova Scotia Occupational Exposure Limits	boric acid (Boric acid)		2		6				TLV Basis/Critical Effect(s): irritation (eyes, nose, respiratory tract, skin); reproductive; developmental
US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)	boric acid (BORON AND COMPOUNDS)		0.01						
Canada - British Columbia Occupational Exposure Limits	boric acid (Borate compounds, Inorganic, Inhalable Revised 2005)		2		6				
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	boric acid (Borate compounds, inorganic (inhalable fraction++))		2		6				
Canada - British Columbia Occupational Exposure Limits	boric acid (Particles (Insoluble or Poorly Soluble) Not Otherwise Classified (PNOC))		10 (N)						

US - California Permissible Exposure Limits for Chemical Contaminants	boric acid (Particulates not otherwise regulated Respirable fraction)		5	(n)
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	boric acid (Particulates not otherwise regulated Respirable fraction)		5	
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	boric acid (Particulates not otherwise regulated (PNOR)(f)- Respirable fraction)		5	
US - Michigan Exposure Limits for Air Contaminants	boric acid (Particulates not otherwise regulated, Respirable dust)		5	
US - Oregon Permissible Exposure Limits (Z-1)	boric acid (Particulates not otherwise regulated (PNOR) (f) Total Dust)	-	10	Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means “particles not otherwise regulated.”
US - Oregon Permissible Exposure Limits (Z-1)	boric acid (Particulates not otherwise regulated (PNOR) - (f) Respirable Fraction)	-	5	Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means “particles not otherwise regulated.”

ENDOELTABLE

**PERSONAL PROTECTION**



**RESPIRATOR**

Particulate  
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 usually required. If risk of overexposure exists, wear an approved respirator.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Solid.

Mixes with water.

State	Divided solid	Molecular Weight	64.85
Melting Range (°F)	336.2 (decomposes)	Viscosity	Not Applicable
Boiling Range (°F)	Not applicable.	Solubility in water (g/L)	Miscible
Flash Point (°F)	Non flammable	pH (1% solution)	5.2 @ 20 C
Decomposition Temp (°F)	336.2	pH (as supplied)	3.9 @ 4% 20 degC
Autoignition Temp (°F)	Not available.	Vapour Pressure (mmHG)	Not applicable.
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	1.44-1.5128
Lower Explosive Limit (%)	Not applicable	Relative Vapor Density (air=1)	Not applicable.
Volatile Component (%vol)	Not applicable.	Evaporation Rate	Not applicable

### APPEARANCE

Colourless, odourless, transparent crystals, or white granules or powder; mixes with water, glycerol, ether, alcohol, methanol, liquid ammonia; slightly soluble in acetone. Boric acid is a weak acid. Loses chemically combined water upon heating, forming: metaboric acid (HBO<sub>2</sub>) @ 100-105 deg.C pyroboric acid (H<sub>2</sub>-B<sub>4</sub>-O<sub>7</sub>) @ 140-160 deg.C and boric anhydride (B<sub>2</sub>-O<sub>3</sub>) at higher temperatures. Solubility in water @ 30 deg.C: 6.35 g/100 cc; @ 100 deg.C: 27.6 g/100 cc.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

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

### STORAGE INCOMPATIBILITY

■ Boric acid:

- is a weak acid
- is incompatible with alkali carbonates, hydroxides (forming borate salts), strong reducing agents and alkali metals
- reacts violently with potassium metal
- forms heat-sensitive explosive compound on contact with acetic anhydride.

Segregate from alcohol, water.

- Avoid strong bases.

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

## Section 11 - TOXICOLOGICAL INFORMATION

boric acid

### TOXICITY AND IRRITATION

BORIC ACID:

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

TOXICITY	IRRITATION
Oral (woman) LDLo: 200 mg/kg	Skin (human): 15 mg/3d -I- Mild
Oral (rat) LD50: 2660 mg/kg	
Inhalation (rat) LCLo: 28 mg/m <sup>3</sup> /4h	
Dermal (man) LDLo: 2430 mg/kg	

■ The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

### CARCINOGEN

VPVB_(VERY~	US - Maine Chemicals of High Concern List	Carcinogen
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## Section 12 - ECOLOGICAL INFORMATION

No data

### Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
boric acid	LOW		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 \_\_\_\_\_  
\_\_\_\_\_ Boric 360 225 lno 0 0 lno 1 0 0 (0) (1) 1 1 R S 3 acid / 4 rg rg CAS:10043 - 35- 3 /

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 or consult manufacturer for recycling options.
- Consult Waste Management Authority for disposal.

## Section 14 - TRANSPORTATION INFORMATION

### Air Transport IATA:

ICAO/IATA Class: None ICAO/IATA Subrisk: None

UN/ID Number: None Packing Group: -  
ERG Code: - Special provisions: None  
Cargo Only  
Packing Instructions: -  
Maximum Qty/Pack: - Passenger and Cargo  
Passenger and Cargo Packing Instructions: -  
Maximum Qty/Pack: - Passenger and Cargo Limited Quantity  
Passenger and Cargo Limited Quantity Packing Instructions: -  
Maximum Qty/Pack: -  
Shipping Name: INSECTICIDE, SOLID OR LIQUID, SEE 3.6.1.8  
NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IMDG

## Section 15 - REGULATORY INFORMATION

**boric acid (CAS: 14149-58-7,11113-50-1,41685-84-1) is found on the following regulatory lists;**

"Canada - Nova Scotia Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens","Canada Domestic Substances List (DSL)","Canada Ingredient Disclosure List (SOR/88-64)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","GESAMP/EHS Composite List - GESAMP Hazard Profiles","OECD Representative List of High Production Volume (HPV) Chemicals","US - Maine Chemicals of High Concern List","US ACGIH Threshold Limit Values (TLV)","US ACGIH Threshold Limit Values (TLV) - Carcinogens","US Cosmetic Ingredient Review (CIR) Cosmetic ingredients found safe, with qualifications","US DOE Temporary Emergency Exposure Limits (TEELs)","US FDA Indirect Food Additives: Adhesives and Components of Coatings - Substances for Use Only as Components of Adhesives - Adhesives","US Food Additive Database","US Toxic Substances Control Act (TSCA) - Inventory"

## Section 16 - OTHER INFORMATION

### Ingredients with multiple CAS Nos

Ingredient Name CAS boric acid 14149-58-7, 11113-50-1, 41685-84-1

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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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