

# Sodium tetraborate decahydrate

sc-212947



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

Sodium tetraborate decahydrate

### 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

Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub>·10H<sub>2</sub>O, "CAS RN 12447-40-4", "CAS RN 61028-24-8", "disodium tetraborate decahydrate", "sodium baborate decahydrate", "sodium pyroborate, decahydrate", "sodium tetraborate, decahydrate", Antipyonin, Borascu, Borax, "Borax decahydrate", Boricin, "Borax 10 mol", Jaikin, Neobor, Polybor, RIX-01, "Ikon Borax Deca", "Thermax C-Max", "Plaschem Electroless Nickel Additive"

## Section 2 - HAZARDS IDENTIFICATION

### CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	0	
Toxicity:	2	
Body Contact:	2	
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.

Irritating to eyes, respiratory system and skin.

## POTENTIAL HEALTH EFFECTS

### ACUTE HEALTH EFFECTS

#### SWALLOWED

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

■ 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

■ 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.

■ 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.

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

#### CHRONIC HEALTH EFFECTS

■ Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.

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.

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	%
sodium borate, decahydrate	1303-96-4	>98

## 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. · Lay patient down. Keep warm and rested.

## NOTES TO PHYSICIAN

■ 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):	Negligible
Upper Explosive Limit (%):	Not applicable
Specific Gravity (water=1):	1.71-1.73
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.
- Decomposition may produce toxic fumes of: metal oxides.

May emit poisonous fumes.

May emit corrosive fumes.

## FIRE INCOMPATIBILITY

■ None known.

## PERSONAL PROTECTION

Glasses:

Chemical goggles.

Gloves:

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

- 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.

## 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 - Minnesota Permissible Exposure Limits (PELs)	sodium borate, decahydrate (Borates, tetra, sodium salts - Decahydrate)		10						
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	sodium borate, decahydrate (Borates, tetra, sodium salts (Decahydrate))		10						
US ACGIH Threshold Limit Values (TLV)	sodium borate, decahydrate (Sodium tetraborate - Decahydrate)		2		6				TLV Basis: upper respiratory tract irritation
Canada - Nova Scotia Occupational Exposure Limits	sodium borate, decahydrate (Sodium tetraborate - Decahydrate)		2		6				TLV Basis: upper respiratory tract irritation
Canada - Prince Edward Island Occupational Exposure Limits	sodium borate, decahydrate (Sodium tetraborate - Decahydrate)		2		6				TLV Basis: upper respiratory tract irritation
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	sodium borate, decahydrate (Sodium tetraborate, decahydrate or borax)		5						
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	sodium borate, decahydrate (Sodium tetraborate, anhydre)		1						
US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)	sodium borate, decahydrate (BORON AND COMPOUNDS)		0.01						
US - Hawaii Air Contaminant Limits	sodium borate, decahydrate (Borates, tetra, sodium salts - Pentahydrate)		1						
Canada - Northwest Territories Occupational Exposure Limits (English)	sodium borate, decahydrate (Borates, tetra, sodium salts, Pentahydrate)		1		3				
US - Hawaii Air Contaminant Limits	sodium borate, decahydrate (Borates, tetra, sodium salts - Decahydrate)		5						

US - Washington Permissible exposure limits of air contaminants	sodium borate, decahydrate (Borates, tetra, sodium salts - Decahydrate)	5	10
US - Washington Permissible exposure limits of air contaminants	sodium borate, decahydrate (Borates, tetra, sodium salts - Pentahydrate)	1	3
Canada - British Columbia Occupational Exposure Limits	sodium borate, decahydrate (Borate compounds, Inorganic, Inhalable Revised 2005)	2	6
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	sodium borate, decahydrate (Borate compounds, inorganic (inhalable fraction++))	2	6
Canada - Alberta Occupational Exposure Limits	sodium borate, decahydrate (Borates, tetra, sodium salts, Decahydrate)	1	3
US - California Permissible Exposure Limits for Chemical Contaminants	sodium borate, decahydrate (Borates, tetra, sodium salts Decahydrate)	5	
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	sodium borate, decahydrate (Borates, tetra, sodium salts Decahydrate)	10	
US NIOSH Recommended Exposure Limits (RELs)	sodium borate, decahydrate (Borates, tetra, sodium salts (Decahydrate))	5	
US - Alaska Limits for Air Contaminants	sodium borate, decahydrate (Borates, tetra, sodium salts - Decahydrate)	10	
US - Michigan Exposure Limits for Air Contaminants	sodium borate, decahydrate (Borates, Tetra, Sodium Salts Decahydrate)	10	
Canada - Northwest Territories Occupational Exposure Limits (English)	sodium borate, decahydrate (Borates, tetra, sodium salts, Decahydrate)	5	10
US NIOSH Recommended Exposure Limits (RELs)	sodium borate, decahydrate (Borates, tetra, sodium salts (Anhydrous))	1	

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.

- Neoprene gloves.

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	381.37
Melting Range (°F)	143.6- 167	Viscosity	Not Applicable
Boiling Range (°F)	608 (loses H2O)	Solubility in water (g/L)	Miscible
Flash Point (°F)	Not Applicable	pH (1% solution)	9.2-9.5
Decomposition Temp (°F)	2867	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available.	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	1.71-1.73
Lower Explosive Limit (%)	Not applicable	Relative Vapor Density (air=1)	Not Applicable
Volatile Component (%vol)	Nil @ 38C	Evaporation Rate	Non Volatile

**APPEARANCE**

Hard, odourless crystals, granules or powder. Soluble in glycerol; very slightly soluble in alcohol; insoluble in acids. Solubility in water @ 0 deg.C: 2.01 g/100 cc. @ 100 deg.C: 170 g/100 cc. Loses water of crystallization when heated: @ 100 deg C. - 5 mols H2O; @ 150 deg.C. - 9 mols H2O; @ 320 deg. C. -10 mols H2O.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

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

### STORAGE INCOMPATIBILITY

- Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
- These trifluorides are hypergolic oxidisers. They ignites on contact (without external source of heat or ignition) with recognised fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition.
- The state of subdivision may affect the results.

Avoid storage with reducing agents.

Avoid contact finely divided zirconium.

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

## Section 11 - TOXICOLOGICAL INFORMATION

sodium borate, decahydrate

### TOXICITY AND IRRITATION

SODIUM BORATE, DECAHYDRATE:

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

TOXICITY	IRRITATION
----------	------------

Dermal (rabbit) LD50: >10,000 mg/kg	Nil Reported
-------------------------------------	--------------

Inhalation (rat) LC50: >2.0 mg/L	
----------------------------------	--

Oral (man) LDLo: 709 mg/kg	
----------------------------	--

Oral (rat) LD50: 2660 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.

Oral (rat) LD50: 4500-5000 mg/kg Eyes (rabbit) (-) Mild

[Orica BORAX-Europe]

Reproductive effector in rats

Mutagenic towards bacteria

## Section 12 - ECOLOGICAL INFORMATION

No data

### 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 \_\_\_\_\_  
\_\_\_\_\_ Borax, 359 143 Ino 0 0 Ino 1 0 0 0 (1) 1 1 R S 3 anhydrous rg rg or hydrated, crude or refined /  
CAS:1303- 96- 4 / VZ2275000

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

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

## Section 15 - REGULATORY INFORMATION

**sodium borate, decahydrate (CAS: 1303-96-4,1344-90-7,12447-40-4,61028-24-8) 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 - Quebec Permissible Exposure Values for Airborne Contaminants (English)", "Canada Domestic Substances List (DSL)", "Canada Ingredient Disclosure List (SOR/88-64)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)", "OECD Representative List of High Production Volume (HPV) Chemicals", "US - Connecticut Hazardous Air Pollutants", "US - Minnesota Hazardous Substance List", "US - Minnesota Permissible Exposure Limits (PELs)", "US - Pennsylvania - Hazardous Substance List", "US - Rhode Island Hazardous Substance List", "US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants", "US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants", "US ACGIH Threshold Limit Values (TLV)", "US ACGIH Threshold Limit Values (TLV) - Carcinogens", "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 sodium borate, decahydrate 1303-96-4, 1344-90-7, 12447-40-4, 61028-24-8

*Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.*

■ 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.

*This document is copyright. Apart from any fair dealing for the purposes of private study, research, review or criticism, as permitted under the Copyright Act, no part may be reproduced by any process without written permission from CHEMWATCH. TEL (+61 3) 9572 4700.*

Issue Date: Jan-28-2009

Print Date: Feb-11-2011