Sodium

sc-212932

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Sodium

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, "sodium, metallic", natrium, "sodium, lumps, under petroleum", "sodium (metal) in paraffin", "sodium, metal", "sodium metal"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	4		
Toxicity:	0		
Body Contact:	3		
Reactivity:	2		
Chronic:	2		

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

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

Causes burns.
Risk of serious damage to eyes.
Reacts violently with water liberating extremely flammable gases.
Extremely flammable.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.
■ The material has NOT been classified as "harmful by ingestion".
This is because of the lack of corroborating animal or human evidence.

EYE

■ The material can produce chemical burns to the eye following direct contact.
Vapors or mists may be extremely irritating.
■ If applied to the eyes, this material causes severe eye damage.

SKIN

■ The material can produce chemical burns following direct contactwith the skin.
■ 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

■ If inhaled, this material can irritate the throat andlungs of some persons.
■ 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.
■ The material has NOT been classified as "harmful by inhalation" nor has it been designated as "irritating to the respiratory system".
This is because of the lack of corroborating animal or human evidence.
■ Not normally a hazard due to non-volatile nature of product.

CHRONIC HEALTH EFFECTS

■ Repeated or prolonged exposure to corrosives may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue.
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.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
sodium	7440-23-5	100

Section 4 - FIRST AID MEASURES

SWALLOWED

· For advice, contact a Poisons Information Center or a doctor at once. · Urgent hospital treatment is likely to be needed.

EYE

■ If this product comes in contact with the eyes: · Immediately hold eyelids apart and flush the eye continuously with 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: · Immediately flush body and clothes with large amounts of water, using safety shower if available. · Quickly remove all contaminated clothing, including footwear.

INHALED

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

NOTES TO PHYSICIAN

■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not applicable
Upper Explosive Limit (%):	Not applicable

Specific Gravity (water=1):	0.97
Lower Explosive Limit (%):	Not applicable

EXTINGUISHING MEDIA

■ DO NOT USE WATER, CO2 OR FOAM ON SUBSTANCE ITSELF
For SMALL FIRES:
· Dry chemical, soda ash or lime.
For LARGE FIRES:
· DRY sand, dry chemical, soda ash;

FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.
· May be violently or explosively reactive.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 800 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

■ Combustion products include: metal oxides.
Ignites spontaneously in air or oxygen.
Solid in contact with water or moisture liberates flammable hydrogen gas with sufficient heat to cause ignition or explosion.
Burns violently accompanied by explosions, which can cause spattering of material.
Decomposes to form toxic fumes of the oxide, which can react with moisture or steam to produce heat,the corrosive hydroxide and flammable hydrogen gas.

FIRE INCOMPATIBILITY

■ Segregate from alcohol, water.
· NOTE: May develop pressure in containers; open carefully. Vent periodically.
· Keep dry.

PERSONAL PROTECTION

Glasses:
Full face- shield.
Gloves:
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Material from spill may be contaminated with water resulting in generation of gas which subsequently may pressure closed containers.
· Hold spill material in vented containers only and plan for prompt disposal.
· Eliminate all ignition sources.
· Cover with DRY earth, sand or other non-combustible material.
MAJOR SPILLS
· Clear area of personnel and move upwind.
· 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 overexposure occurs.

RECOMMENDED STORAGE METHODS

■ DO NOT repack. Use only containers as originally supplied by manufacturer.
Storage containers must be hermetically sealed; the product must bestored under an inert, dry gas.
For low viscosity materials and solids: Drums and jerricans must be of the non-removable head type. Where a can is to be used as an inner package, the can must have a screwed enclosure.

STORAGE REQUIREMENTS

■ For sodium metal:
· Store in an airtight container under an inert atmosphere such as nitrogen or argon (not carbon dioxide), or in naphtha or another similar liquid hydrocarbon, such as coal oil or kerosene. Never store under halogenated hydrocarbons such as Freon or methylene chloride
· Storage area should be warm and dry to prevent moisture condensation
· For laboratory quantities. Supplied in a sealed glass container with sodium under dry kerosene.
· For industrial quantities. Supplied as bricks under oil/ kerosene in nitrogen purged sealed metal can inner, which are then packed in a nitrogen purged heavy metal drum outer.
KEEP DRY! Packages must be protected from water ingress.
FOR MINOR QUANTITIES:
· Store in an indoor fireproof cabinet or in a room of noncombustible construction and
· provide adequate portable fire-extinguishers in or near the storage area.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• sodium: CAS:7440-23-5

PERSONAL PROTECTION





RESPIRATOR

Particulate

Consult your EHS staff for recommendations

EYE

· Chemical goggles.

· Full face shield.

HANDS/FEET

■ Wear chemical protective gloves, eg. PVC.

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.

· Layered protective clothing gives added protection from burns, e.g. elbow length mitts (which are oversize for easy removal) over fitting gloves.

· Where possible design should minimise manual handling.

· Because of fire hazard, do not use rubber or plastic protective clothing which will melt compounding burn injury.

· All protective clothing must be kept warm and dry, to prevent condensation of atmospheric moisture.

OTHER

■ For industrial quantities:

· Hard hat with brim.

· Layered protective clothing gives added protection from burns, consider supply of fire resistant underwear, trousers, heavy duty shoes.

· Overalls.

· Eyewash unit.

· Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.

· For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets), non sparking safety footwear.

ENGINEERING CONTROLS

■ Local exhaust systems must be designed to provide a minimum capture velocity at the fume source away from the worker of 0.5 metre/sec.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.

State	Divided solid	Molecular Weight	22.99
Melting Range (°F)	207.68	Viscosity	Not Applicable
Boiling Range (°F)	1637.6	Solubility in water (g/L)	Reacts violently
Flash Point (°F)	Not applicable	pH (1% solution)	14
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	212	Vapour Pressure (mmHG)	Not applicable
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	0.97
Lower Explosive Limit (%)	Not applicable	Relative Vapor Density (air=1)	Not applicable

Volatile Component (%vol)	Not applicable.	Evaporation Rate	Not applicable

APPEARANCE

Odourless, soft, silver-white metal oxidising (to grey) rapidly in air. Wax-like at room temperature, brittle at low temperatures. Violently decomposes water on contact with evolution of flammable hydrogen gas to form sodium hydroxide. Insoluble in benzene, kerosene and naphtha. Store in air-tight containers or in naphtha or similar liquid that does not contain water or free oxygen.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

· Presence of heat source and ignition source.
· Presence of incompatible materials.
· Presence of air.
· May heat spontaneously
· Identify and remove sources of ignition and heating.

STORAGE INCOMPATIBILITY

■ Sodium:
· is an extremely flammable solid which evolves sodium oxide at its autoignition temperature
· produces unstable peroxides on exposure to moist air and/ or may spontaneously ignite
· reacts violently with water, forming flammable hydrogen gas, sodium hydroxide, heat, often with fire
· is a powerful reducing agent
· reacts violently with oxidisers, acids, antimony chloride, carbon dioxide, carbon monoxide, carbon tetrachloride, chlorobenzene, copper oxide, diazomethane, dibromomethylborane, haloids, halogens, halogenated hydrocarbons (such as chlorinated solvents), heavy metal oxides, hexachlorocyclopentadiene, hydrazine hydrate, iodine monochloride, iodine pentafluoride, iron bromide, lead dioxide, maleic anhydride, manganese chloride, methyl chloride, methyl iodide, nitrous oxide, nitrosyl fluoride, nitrotoluene, nitryl fluoride, oxygen difluoride, phosgene, phosphorus, phosphorus pentachloride, phosphorus trichloride, seleninyl bromide, silver bromide, silver chloride, silver fluoride, silver oxide, silver iodide, sodium peroxide, sulfur, tetrachloroethane, trichloroethylene, vanadium oxytrichloride, and many other substances
· forms explosive mixtures with many substances including aluminium bromide, ammonium nitrate, arsenic iodide, ferric chloride, nitrotoluene, sodium nitrate
· is incompatible with many substances including boron trifluoride, chromic acid, cobalt bromide, cobalt chloride, mercury oxide, thionyl chloride, titanium dioxide, Teflon, , volatile hydrocarbons such as petroleum ether
· reacts violently with most common fire extinguishers
NOTE:
· Separate from all other materials and ensure the metal remains moisture free
· Store under inert gas or liquid hydrocarbon
· Mixtures of sodium with a wide range of halogenated alkane solvents are metastable and capable of initiation to explosion by shock or impact - generally the sensitivity to initiation and the force of the explosion increases with the degree of halogen substitution. Any aliphatic halocarbon (except fully fluorinated alkanes) may be expected to behave in this manner
· Sodium dispersions reduce metal halides exothermically
· Sodium and carbon dioxide are normally unreactive till red heat is attained but mixtures of the two solids are impact-sensitive and explode violently. Carbon dioxide is unsuitable as an extinguishant for the burning metal alone as the intensity of combustion is increased by replacing air with carbon dioxide (72.7% oxygen content). However it has been used successfully to extinguish solvent fires where sodium is present since it fails to ignite because of the blanketing effect of solvent vapour.
· Finely divided silica (sand) will often react with burning sodium so is not entirely suitable as an extinguishant
· Explosions have occurred when carbon powder is in contact with evaporating sodium and air.
· 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 any contamination of this material as it is very reactive and any contamination is potentially hazardous.
Segregate from alcohol, water.
· NOTE: May develop pressure in containers; open carefully. Vent periodically.

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

Section 11 - TOXICOLOGICAL INFORMATION

sodium

TOXICITY AND IRRITATION

SODIUM:

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

No significant acute toxicological data identified in literature search.

CARCINOGEN

	US - Rhode Island Hazardous Substance List	IARC	
METALS	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC

Section 12 - ECOLOGICAL INFORMATION

This material and its container must be disposed of as hazardous waste.

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

A. General Product Information
Reactivity characteristic: use EPA hazardous waste number D003 (waste code R).

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ For small quantities:
· Cautiously add the material to dry butanol in an appropriate solvent.
· Reaction may be vigorous and exothermic.
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.
For disposal of small quantities (up to 5-10 g) of sodium metal immerse in isopropanol, which may contain up to 2% of water to increase the rate of reaction
For quantities up to 50 g burn in a heavy metal dish using a gas flame with suitable arrangements for dispersion or absorption of the alkali particulate smoke so produced.
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.
· Recycle where possible.
· Consult Waste Management Authority for disposal.

Section 14 - TRANSPORTATION INFORMATION

DOT:
Symbols: None Hazard class or Division: 4.3
Identification Numbers: UN1428 PG: I
Label Codes: 4.3 Special provisions: A7, A8,
A19, A20,
B9, B48,
B68, IB4,
IP1, N34,
T9, TP7,
TP33, TP46
Packaging: Exceptions: None Packaging: Non- bulk: 211
Packaging: Exceptions: None Quantity limitations: Forbidden
Passenger aircraft/rail:
Quantity Limitations: Cargo 15 kg Vessel stowage: Location: D
aircraft only:
Vessel stowage: Other: 52
Hazardous materials descriptions and proper shipping names:
Sodium

Air Transport IATA:

ICAO/IATA Class: 4.3 ICAO/IATA Subrisk: None
UN/ID Number: 1428 Packing Group: I
Special provisions: A1
Cargo Only
Packing Instructions: 15 kg Maximum Qty/Pack: Forbidden
Passenger and Cargo Passenger and Cargo

Packing Instructions: 412 Maximum Qty/Pack: Forbidden
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: Forbidden Maximum Qty/Pack: Forbidden
Shipping Name: SODIUM

Maritime Transport IMDG:

IMDG Class: 4.3 IMDG Subrisk: None
UN Number: 1428 Packing Group: I
EMS Number: F-G , S-N Special provisions: None
Limited Quantities: 0
Shipping Name: SODIUM

Section 15 - REGULATORY INFORMATION

sodium (CAS: 7440-23-5) is found on the following regulatory lists;

"Canada Domestic Substances List (DSL)","Canada Environmental Quality Guidelines (EQGs) Water: Community","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","OECD Representative List of High Production Volume (HPV) Chemicals","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - Massachusetts Oil & Hazardous Material List","US - New Jersey Right to Know Hazardous Substances","US - Pennsylvania - Hazardous Substance List","US - Rhode Island Hazardous Substance List","US CWA (Clean Water Act) - List of Hazardous Substances","US CWA (Clean Water Act) - Reportable Quantities of Designated Hazardous Substances","US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities - Hazardous Substances Other Than Radionuclides","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 List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act","US Toxic Substances Control Act (TSCA) - Inventory","WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established"

Section 16 - OTHER INFORMATION

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.

■ 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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