

Lotaustralin

sc-207835



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

Lotaustralin

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

PRODUCT USE

■ Intermediate. Extracted from cassava (*Manihot esculenta*), lima beans (*Phaseolus lunatus*).

SYNONYMS

C11-H19-N-O6, "butanenitrile, 2-(beta-D-glucopyranosyloxy)-2-methyl-, (R)-", (R)-lotaustralin, "cyanogenic glycosides"

Section 2 - HAZARDS IDENTIFICATION

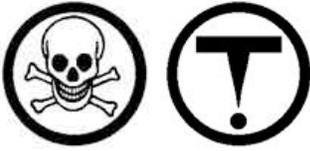
CHEMWATCH HAZARD RATINGS

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

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



CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

Contact with acids liberates very toxic gas.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Although ingestion is not thought to produce harmful effects, the material may still be damaging to the health of the individual following ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident.

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■ Cyanide intoxication, from cyanogenic glycosides, is common in tropical regions and is associated with motor-neuron diseases such as "konzo" and "mantekassa". Toxic effects are especially evident when foods or treatments, containing these cyanogens, are taken concurrently with foods containing high levels of the beta-glucosidase enzymes (such as the seeds of apples and pears). The potential toxicity of a cyanogenic plant depends primarily on its capacity to produce hydrogen cyanide at concentrations toxic to humans and animals. The release of hydrogen cyanide can occur either maceration of the plant material - this activates the intracellular beta-glucosidase which in turn hydrolyses glycoside - or by hydrolysis of glycoside by the microflora of the gut. Intestinal microflora, in the rat, are capable of releasing cyanide from cyanogenic glycosides such as amygdalin (and other mandelonitrile glycosides), and it is probable that this mechanism accounts for the (up to) 40-fold toxic effect when these substances are administered by mouth (or other enteral routes - per os, enemas, suppositories) compared to the intravenous route. Symptoms of cyanide poisoning may be delayed compared to that of inorganic cyanides.

■ Cyanide poisoning can cause increased saliva output, nausea without vomiting, anxiety, confusion, vertigo, dizziness, stiffness of the lower jaw, convulsions, spasm, paralysis, coma and irregular heartbeat, and stimulation of breathing followed by failure. Often the skin becomes cyanosed (blue-gray), and this is often delayed.

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EYE

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

SKIN

■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

■ The material is not thought to be a skin irritant (as classified using animal models). Temporary discomfort, however, may result from prolonged dermal exposures.

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■ Open cuts, abraded or irritated skin should not be exposed to this material.

■ Toxic effects may result from skin absorption.

INHALED

■ The material is not thought to produce respiratory irritation (as classified using animal models). Nevertheless inhalation of the material, 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.

CHRONIC HEALTH EFFECTS

■ Principal routes of exposure are by accidental skin and eye contact and inhalation of generated dusts.

There are grounds to suspect that cyanogenic glycoside-contaminated foodstuffs, such as cassava and pulses, are directly implicated in acute and chronic cyanide toxicity.

Symptoms of chronic cyanide poisoning include headache, vertigo, tinnitus, nausea, vomiting and tremors. These symptoms tend to be transitory and exposure to fresh air generally results in recovery.

On the basis of epidemiological observations, associations have been made between chronic exposure to cyanogenic glycosides and diseases such as goitre, spastic paraparesis, and tropical ataxic neuropathy. However these observations are confounded by nutritional deficiencies, and causal relationships have not been definitely established.

It appears that chronic cyanide intoxication, resulting from intake of foods containing these glycosides, in combination with deficient intake of riboflavin and/ or a poor quality of protein, and hence methionine deficiency is/ are responsible.

Epidemiological and experimental studies show that cyanogenic glycosides in food products play an important role in the development of goitre. Thiocyanate, the detoxification product of hydrogen cyanide derived from cyanogenic products, is responsible for interference with thyroid function. Studies on endemic goitre in Africa have identified iodine deficiency and the antithyroid activity of cyanogenic cassava diets, as major etiological factors of the disease. Cretinism has also been identified amongst the off-spring of women exposed to a diet of insufficiently processed cassava. This effect is also caused by metabolic thiocyanate. Such findings occur in individuals who are also subject to low dietary intake of iodine - this is a common dietary constraint in many Africans.

Another study which evaluates the possible association of high cyanide and low sulfur intake in cassava-induced spastic paraparesis (SP) was conducted in Mozambique. The study concluded that where dietary intake of sulfur-containing amino acids was low, the incidence of SP was high in those individuals whose diet was largely cassava-based. Sulfur-containing amino acids are essential for the detoxification of cyanide.

In Nigeria, chronic cyanide intoxication is caused by the consumption of a cassava diet. A lack of dietary riboflavin (Vitamin B2) has been associated with the development of tropical (ataxia) neuropathy (TAN) amongst individuals whose diet is largely cassava dependent. The essential neurological components of the disease are myelopathy, bilateral optic atrophy, perceptive deafness and polyneuropathy. The initial and most common symptoms consist of various forms of paraesthesia and dysaesthesia, usually starting in the distal portion of the lower

limbs. In about a third of patients, stomatoglossitis is present. Additionally symptoms include motor neurone disease, Parkinson's disease, cerebellar degeneration, psychosis and dementia. A high prevalence of goitre is also seen in populations with a high incidence of TAN. Chronic exposure to cyanides and certain nitriles may result in interference to iodine uptake by thyroid gland and its consequent enlargement. This occurs following metabolic conversion of the cyanide moiety to thiocyanate.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
lotaustralin	534-67-8	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

■ **IMPORTANT: ESTABLISH A FIRST AID PLAN BEFORE WORKING WITH CYANIDES. ANTIDOTES SHOULD BE AVAILABLE ON SITE.** · Prompt response in an emergency is vital. · All workers are to be trained and refresher trained in procedures. · Rescuers might need the protection of breathing apparatus where there is the potential of exposure to airborne cyanide. · Use the buddy system and avoid becoming a casualty. In all cases of cyanide exposure get medical help urgently after administering first aid. For cyanide poisonings by any route: · Contact Poisons Advisory Center or a doctor. · Seek immediate medical attention.

EYE

■ If this product comes in contact with the eyes: · Immediately hold eyelids apart and flush the eye continuously with running water. · Continue flushing until advised to stop by the Poisons Information Center or a doctor, or for at least 15 minutes.

SKIN

■ If skin or hair contact occurs: · Quickly but gently, wipe material off skin with a dry, clean cloth. · Immediately remove all contaminated clothing, including footwear.

INHALED

· If inhaled, remove from contaminated area. · Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. · Give oxygen and, if necessary, artificial respiration preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. · Remove contaminated clothing and wash contaminated skin thoroughly. · Get to a hospital or doctor quickly.

NOTES TO PHYSICIAN

■ Perhaps cyanide is released slowly from cyanogenic glycosides, such as amygdalin. The course of intoxication may be protracted necessitating repeated course of therapy. In the event, it is safer and more efficient to repeat injections of thiosulfate and not nitrite. GOSSELIN, SMITH & HODGE: Clinical Toxicology of Commercial Products, 5th Ed.
· Signs symptoms of acute cyanide poisoning reflect cellular hypoxia and are often non-specific.
· Cyanosis may be a late finding.

Section 5 - FIRE FIGHTING MEASURES

Upper Explosive Limit (%):	Not available.
Specific Gravity (water=1):	Not available
Lower Explosive Limit (%):	Not available
Relative Vapor Density (air=1):	>1

EXTINGUISHING MEDIA

· Water spray or fog.
· Foam.

FIRE FIGHTING

■ Alert Emergency Responders and tell them location and nature of hazard.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains or water courses.
Cool fire exposed containers with water spray from a protected location.
Fight fire from a safe distance, with adequate cover.
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

· Solid which exhibits difficult combustion or is difficult to ignite.
· 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) and nitrogen oxides (NOx).

PERSONAL PROTECTION

Glasses:
Safety Glasses.

Gloves:
 Respirator:
 Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Clean up all spills immediately.
- Avoid contact with skin and eyes.

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

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

RECOMMENDED STORAGE METHODS

- Glass container.
- Plastic container.
- Plastic drum.
- Polylined drum.
- Packaging as recommended by manufacturer.
- Check that containers are clearly labeled.

STORAGE REQUIREMENTS

- Observe manufacturer's storing and handling recommendations.
- Store in original containers.
- Store away from sources of heat or ignition / naked lights.
- Store in a cool, dry place.
- Store away from incompatible materials.
- DO NOT store near acids, or oxidizing agents.
- Keep containers securely sealed.
- Check regularly for spills and leaks.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	TWA F/CC	Notes
US - Oregon Permissible Exposure Limits (Z-3)	lotaustralin (Inert or Nuisance Dust: Total dust)		10						(d)
US OSHA Permissible Exposure Levels (PELs) - Table Z3	lotaustralin (Inert or Nuisance Dust: (d) Respirable fraction)		5						
US OSHA Permissible Exposure Levels (PELs) - Table Z3	lotaustralin (Inert or Nuisance Dust: (d) Total dust)		15						
US - Hawaii Air Contaminant Limits	lotaustralin (Particulates not otherwise regulated - Total dust)		10						

US - Hawaii Air Contaminant Limits	lotaustralin (Particulates not other wise regulated - Respirable fraction)	5	
US - Oregon Permissible Exposure Limits (Z-3)	lotaustralin (Inert or Nuisance Dust: Respirable fraction)	5	(d)
US - California Permissible Exposure Limits for Chemical Contaminants	lotaustralin (Particulates not otherwise regulated Respirable fraction)	5	(n)
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	lotaustralin (Particulates not otherwise regulated Respirable fraction)	5	
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	lotaustralin (Particulates not otherwise regulated (PNOR)(f)- Respirable fraction)	5	
US - Michigan Exposure Limits for Air Contaminants	lotaustralin (Particulates not otherwise regulated, Respirable dust)	5	
Canada - Prince Edward Island Occupational Exposure Limits	lotaustralin (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)	10	See Appendix B current TLV/BEI Book

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

Particulate

Consult your EHS staff for recommendations

EYE

- Safety glasses.
- Safety glasses with side shields.

HANDS/FEET

- Impervious gloves.
- Rubber gloves.
- Rubber boots.

OTHER

- Eyewash unit.
- Overalls.
- Laboratory coat.
- Rubber apron.

ENGINEERING CONTROLS

- General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances.

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.

Mixes with water.

Contact with acids liberates very toxic gas.

State	Divided solid	Molecular Weight	261.27
Melting Range (°F)	Not available	Boiling Range (°F)	Not available
Solubility in water (g/L)	Miscible	Flash Point (°F)	Not available
pH (1% solution)	Not available	Decomposition Temp (°F)	Not available
pH (as supplied)	Not applicable	Autoignition Temp (°F)	Not available
Vapour Pressure (mmHG)	Negligible	Upper Explosive Limit (%)	Not available.
Specific Gravity (water=1)	Not available	Lower Explosive Limit (%)	Not available
Relative Vapor Density (air=1)	>1	Volatile Component (%vol)	Negligible
Evaporation Rate	Not applicable		

APPEARANCE

Bitter crystalline solid; mixes with water.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

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

STORAGE INCOMPATIBILITY

- Avoid reaction with oxidizing agents.

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

Section 11 - TOXICOLOGICAL INFORMATION

LOTAUSTRALIN

TOXICITY AND IRRITATION

LOTAUSTRALIN:

- No significant acute toxicological data identified in literature search.

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.

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

Section 14 - TRANSPORTATION INFORMATION

DOT:

Symbols: None Hazard class or Division: 6.1

Identification Numbers: UN2811 PG: III

Label Codes: 6.1 Special provisions: IB8, IP3,

T1, TP33

Packaging: Exceptions: 153 Packaging: Non- bulk: 213
Packaging: Exceptions: 153 Quantity limitations: 100 kg
Passenger aircraft/rail:
Quantity Limitations: Cargo 200 kg Vessel stowage: Location: A
aircraft only:
Vessel stowage: Other: None
Hazardous materials descriptions and proper shipping names:
Toxic solids, organic, n.o.s.

Air Transport IATA:

ICAO/IATA Class: 6.1 ICAO/IATA Subrisk: None
UN/ID Number: 2811 Packing Group: III
Special provisions: A3
Cargo Only
Packing Instructions: 619 Maximum Qty/Pack: 200 kg
Passenger and Cargo Passenger and Cargo
Packing Instructions: 619 Maximum Qty/Pack: 100 kg
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: Y619 Maximum Qty/Pack: 10 kg
Shipping Name: TOXIC SOLID, ORGANIC, N.O.S. *(CONTAINS
LOTAUSTRALIN)

Maritime Transport IMDG:

IMDG Class: 6.1 IMDG Subrisk: None
UN Number: 2811 Packing Group: III
EMS Number: F-A , S-A Special provisions: 223 274
Limited Quantities: 5 kg
Shipping Name: TOXIC SOLID, ORGANIC, N.O.S.

Section 15 - REGULATORY INFORMATION

Iotaustralin (CAS: 534-67-8) is found on the following regulatory lists;

"US - Hawaii Air Contaminant Limits", "US - Oregon Permissible Exposure Limits (Z-3)", "US OSHA Permissible Exposure Levels (PELs) - Table Z3"

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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