

Zinc iodide

sc-237424



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

Zinc iodide

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



SUPPLIER

Santa Cruz Biotechnology, Inc.
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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

ZnI₂

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	0	■
Toxicity:	0	■
Body Contact:	3	■
Reactivity:	0	■
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.

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.
- Soluble zinc salts produces irritation and corrosion of the alimentary tract with pain, and vomiting. Death can occur due to insufficiency of food intake due to severe narrowing of the esophagus and pylorus.
- Ingestion of acidic corrosives may produce burns around and in the mouth. the throat and esophagus.

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.
- Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns. Mild burns of the epithelia generally recover rapidly and completely.

SKIN

- The material can produce chemical burns following direct contact with 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.
- Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue.

INHALED

- 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.
- Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage. There may be dizziness, headache, nausea and weakness.
- There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

CHRONIC HEALTH EFFECTS

- Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

There is limited evidence that, skin contact with this product is more likely to cause a sensitization reaction in some persons compared to the general population.

Exposure to the material may cause concerns for humans owing to possible developmental toxic effects, on the basis that similar materials tested in appropriate animal studies provide some suspicion of developmental toxicity in the absence of signs of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not a secondary non-specific consequence of other toxic effects.

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.

Welding or flame cutting of metals with zinc or zinc dust coatings may result in inhalation of zinc oxide fume; high concentrations of zinc oxide fume may result in "metal fume fever"; also known as "brass chills", an industrial disease of short duration. [I.L.O] Symptoms include malaise, fever, weakness, nausea and may appear quickly if operations occur in enclosed or poorly ventilated areas.

Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs.

Iodine and iodides, may give rise to local allergic reactions such as hives, rupture of skin blood vessels, pain in joints or diseases of the lymph nodes.

Iodine and iodides cause goiter and diminished as well as increased activity of the thyroid gland. A toxic syndrome resulting from chronic iodide overdose and from repeated administration of small amounts of iodine is characterized by excessive saliva production, head cold, sneezing, conjunctivitis, headache, fever, laryngitis, inflammation of the bronchi and mouth cavity, inflamed parotid gland, and various skin rashes.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
zinc iodide	10139-47-6	100
hydrolyses to		
hydrogen iodide	10034-85-2	

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. Inhalation of vapors or aerosols (mists, fumes) may cause lung edema. Corrosive substances may cause lung damage (e.g.

NOTES TO PHYSICIAN

■ Treat symptomatically.
· Absorption of zinc compounds occurs in the small intestine.
· The metal is heavily protein bound.

For acute or short term repeated exposures to strong acids:

· Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
· Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Negligible
Upper Explosive Limit (%):	Not applicable
Specific Gravity (water=1):	4.736
Lower Explosive Limit (%):	Not applicable

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.
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

· Non combustible.
· Not considered to be a significant fire risk.
Decomposition may produce toxic fumes of: metal oxides.

FIRE INCOMPATIBILITY

■ None known.

PERSONAL PROTECTION

Glasses:
Full face- shield.
Gloves:
Respirator:
Type B-P Filter of sufficient capacity

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

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.

RECOMMENDED STORAGE METHODS

- Glass container.

DO NOT use aluminum or galvanized containers.

Check regularly for spills and leaks.

- Lined metal can, Lined metal pail/drum
- Plastic pail.

For low viscosity materials

- 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

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

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
Canada - Ontario Occupational Exposure Limits	zinc iodide (Particles Insoluble or Poorly Soluble Not Otherwise)		10 (I)						
Canada - British Columbia Occupational Exposure Limits	zinc iodide (Particles Insoluble or Poorly Soluble Not Otherwise Classified (PNOC))		10 (N)						
Canada - Ontario Occupational Exposure Limits	zinc iodide (Specified (PNOS) / Particules (insolubles ou peu solubles) non précisées par ailleurs)		3 (R)						
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	zinc iodide (Particulates not otherwise regulated Respirable fraction)		5						

US - California Permissible Exposure Limits for Chemical Contaminants	zinc iodide (Particulates not otherwise regulated Respirable fraction)		5	(n)
US - Oregon Permissible Exposure Limits (Z-1)	zinc iodide (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 - Michigan Exposure Limits for Air Contaminants	zinc iodide (Particulates not otherwise regulated, Respirable dust)		5	
US - Oregon Permissible Exposure Limits (Z-1)	zinc iodide (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."
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	zinc iodide (Particulates not otherwise regulated (PNOR)(f)- Respirable fraction)		5	
Canada - Prince Edward Island Occupational Exposure Limits	zinc iodide (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)		10	See Appendix B current TLV/BEI Book
Canada - Nova Scotia Occupational Exposure Limits	hydrogen iodide (Iodides)	0.01		TLV Basis: Hypothyroidism; upper respiratory tract irritation
US ACGIH Threshold Limit Values (TLV)	hydrogen iodide (Iodides)	0.01		TLV Basis: Hypothyroidism; upper respiratory tract irritation
Canada - Prince Edward Island Occupational Exposure Limits	hydrogen iodide (Iodides)	0.01		TLV Basis: Hypothyroidism; upper respiratory tract irritation

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

- type b-p filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

EYE

- Chemical goggles.
- Full face shield.

HANDS/FEET

- Wear chemical protective gloves, eg. PVC.

NOTE: The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

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.

OTHER

- Overalls.
- PVC Apron.

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.

- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Mixes with water.

Corrosive.

Acid.

State	DIVIDED SOLID	Molecular Weight	319.19
Melting Range (°F)	835	Viscosity	Not Applicable
Boiling Range (°F)	1155dec.	Solubility in water (g/L)	Miscible
Flash Point (°F)	Not applicable	pH (1% solution)	Not available
Decomposition Temp (°F)	1155	pH (as supplied)	Not available
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	4.736
Lower Explosive Limit (%)	Not applicable	Relative Vapor Density (air=1)	Not applicable
Volatile Component (%vol)	Not available	Evaporation Rate	Not applicable

APPEARANCE

White to yellowish solid or colourless hexagonal crystals. No odour. Soluble in water. Soluble in nitric acid, ammonium hydroxide.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Contact with alkaline material liberates heat.

STORAGE INCOMPATIBILITY

- **WARNING:** Avoid or control reaction with peroxides. All transition metal peroxides should be considered as potentially explosive. For example transition metal complexes of alkyl hydroperoxides may decompose explosively.
- The pi-complexes formed between chromium(0), vanadium(0) and other transition metals (haloarene-metal complexes) and mono-or poly-fluorobenzene show extreme sensitivity to heat and are explosive.
- Avoid reaction with borohydrides or cyanoborohydrides.
- Avoid strong bases.
- Inorganic acids are generally soluble in water with the release of hydrogen ions. The resulting solutions have pH's of less than 7.0.
- Inorganic acids neutralize chemical bases (for example: amines and inorganic hydroxides) to form salts.
- Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
- These trifluorides are hypergolic oxidisers. They ignite 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.

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

Section 11 - TOXICOLOGICAL INFORMATION

zinc iodide

TOXICITY AND IRRITATION

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.
- No significant acute toxicological data identified in literature search.
- 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.

CARCINOGEN

Zinc and Compounds	US EPA Carcinogens Listing	Carcinogenicity	D
Zinc and Compounds	US ACGIH Threshold Limit Values (TLV) - Carcinogens	Carcinogen Category	D
zinc iodide	US - Maine Chemicals of High Concern List	Carcinogen	D
Iodides	US ACGIH Threshold Limit Values (TLV) - Carcinogens	Carcinogen Category	A4
hydrogen iodide	US - Rhode Island Hazardous Substance List	IARC	
TWA_F_CC~	US - Maine Chemicals of High Concern List	Carcinogen	A4

Section 12 - ECOLOGICAL INFORMATION

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

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
zinc iodide	HIGH	No Data Available	LOW	HIGH
hydrogen iodide	No Data Available	No Data Available		

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

A. General Product Information

Corrosivity characteristic: use EPA hazardous waste number D002 (waste code C)

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

DOT:

Symbols: None Hazard class or Division: 8

Identification Numbers: UN3260 PG: III

Label Codes: 8 Special provisions: IB8, IP3,

T1, TP33

Packaging: Exceptions: 154 Packaging: Non- bulk: 213

Packaging: Exceptions: 154 Quantity limitations: 25 kg

Passenger aircraft/rail:

Quantity Limitations: Cargo 100 kg Vessel stowage: Location: A
aircraft only:

Vessel stowage: Other: None

Hazardous materials descriptions and proper shipping names:

Corrosive solid, acidic, inorganic, n.o.s.

Air Transport IATA:

UN/ID Number: 3260 Packing Group: III

Special provisions: A3

Cargo Only

Packing Instructions: 100 kg Maximum Qty/Pack: 864

Passenger and Cargo Passenger and Cargo

Packing Instructions: 25 kg Maximum Qty/Pack: 860

Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity

Packing Instructions: 5 kg Maximum Qty/Pack: Y845

Shipping Name: CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.

*(CONTAINS ZINC IODIDE)

Maritime Transport IMDG:

IMDG Class: 8 IMDG Subrisk: None

UN Number: 3260 Packing Group: III

EMS Number: F-A , S-B Special provisions: 223 274

Limited Quantities: 5 kg

Shipping Name: CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.(contains zinc iodide)

Section 15 - REGULATORY INFORMATION

hydrogen iodide (CAS: 10034-85-2) is found on the following regulatory lists;

"Canada - Saskatchewan Industrial Hazardous Substances","Canada Controlled Drugs and Substances Act Schedule VI","Canada Domestic Substances List (DSL)","Canada Ingredient Disclosure List (SOR/88-64)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","US - Alabama Precursor Chemicals","US - Florida Essential Chemicals","US - Florida Precursor Chemicals","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 Department of Homeland Security Chemical Facility Anti-Terrorism Standards - Chemicals of Interest","US Department of Transportation (DOT), Hazardous Material Table","US DOE Temporary Emergency Exposure Limits (TEELs)","US Drug Enforcement Administration (DEA) List I and II Regulated Chemicals","US EPA Acute Exposure Guideline Levels (AEGs) - Interim","US NFPA 45 Fire Protection for Laboratories Using Chemicals - Flammability Characteristics of Common Compressed and Liquefied Gases","US Postal Service (USPS) Hazardous Materials Table: Postal Service Mailability Guide","US Toxic Substances Control Act (TSCA) - Chemical Substance

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

- Cumulative effects may result following exposure*.
- Possible skin sensitiser*.
- May possibly be harmful to the foetus/ embryo*.

* (limited evidence).

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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.

- 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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Issue Date: Jul-7-2008

Print Date: Jun-28-2011