Tin(II) oxide

sc-229464

Material Safety Data Sheet

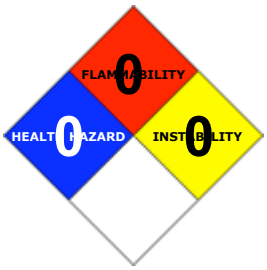
Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Tin(II) oxide

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
O-Sn, SnO, "tin monoxide", "tin protoxide"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

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

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

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ The material has NOT been classified as "harmful by ingestion".
This is because of the lack of corroborating animal or human evidence.
■ Tin salts are not very toxic.
However, at high concentration, nausea, vomiting and diarrhea can occur.

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.
■ 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 adverse health effects or irritation of the respiratory tract (as classified using animal models).
Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
■ 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

■ 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 exposure to tin dusts and fume can result in substantial amounts being deposited in the lungs and result in reduced lung function and difficulty breathing.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
stannous oxide	21651-19-4	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

· Immediately give a glass of water. · First aid is not generally required. If in doubt, contact a Poisons Information Center or a doctor.

EYE

■ If this product comes in contact with eyes: · Wash out immediately with water. · If irritation continues, seek medical attention.

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 dust is inhaled, remove from contaminated area. · Encourage patient to blow nose to ensure clear passage of breathing. · If irritation or discomfort persists seek medical attention.

NOTES TO PHYSICIAN

■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Negligible
Upper Explosive Limit (%):	Not applicable
Specific Gravity (water=1):	6.3
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.

FIRE INCOMPATIBILITY
■ None known.

PERSONAL PROTECTION
Glasses:
Chemical goggles.
Gloves:
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Clean up all spills immediately.
· Avoid breathing dust and contact with skin and eyes.
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/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
US - Oregon Permissible Exposure Limits (Z-1)	stannous oxide (Tin oxide Respirable Fraction)	-	5						Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits.
US - Oregon Permissible Exposure Limits (Z-1)	stannous oxide (Tin oxide Total Dust)	-	10						Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits.
Canada - Yukon Permissible Concentrations for Airborne	stannous oxide (Tin oxide (as Sn))		(See Table 11)						

Contaminant Substances					
US ACGIH Threshold Limit Values (TLV)	stannous oxide (Tin oxide [SnO] (as Sn))	2			TLV Basis: pneumoconiosis; eye & upper respiratory tract irritation; headache; nausea
Canada - Prince Edward Island Occupational Exposure Limits	stannous oxide (Tin oxide [SnO] (as Sn))	2			TLV Basis: pneumoconiosis; eye & upper respiratory tract irritation; headache; nausea
Canada - Nova Scotia Occupational Exposure Limits	stannous oxide (Tin oxide [SnO] (as Sn))	2			TLV Basis: pneumoconiosis; eye & upper respiratory tract irritation; headache; nausea
US - Washington Permissible exposure limits of air contaminants	stannous oxide (Tin oxide (as Sn))	2	4		
US - Hawaii Air Contaminant Limits	stannous oxide (Tin oxide (as Sn))	2	4		
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	stannous oxide (Tin oxide (as Sn))	2			
US - Minnesota Permissible Exposure Limits (PELs)	stannous oxide (Tin oxide (as Sn))	2			
US NIOSH Recommended Exposure Limits (RELs)	stannous oxide (Tin(II) oxide (as Sn))	2			
US - Alaska Limits for Air Contaminants	stannous oxide (Tin oxide (as Sn))	2			
Canada - Northwest Territories Occupational Exposure Limits (English)	stannous oxide (Tin, inorganic compounds, except SnH and SnO (as Sn))	2	4		
US - Idaho - Limits for Air Contaminants	stannous oxide (Tin (inorganic compounds, except oxides) as (Sn))	2			
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	stannous oxide (Tin, inorganic compounds (except oxides) (as Sn))	2			
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	stannous oxide (Tin, inorganic compounds (except oxides) (as Sn))	2			

US - Michigan Exposure Limits for Air Contaminants	stannous oxide (Tin, Inorganic compounds (except oxides)(as Sn))	2	
US - Michigan Exposure Limits for Air Contaminants	stannous oxide (Tin, Inorganic compounds (except oxides) Organic compounds (as Sn))	0.1	
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	stannous oxide (Tin, inorganic compounds (except oxides) (as Sn))	2	
US - California Permissible Exposure Limits for Chemical Contaminants	stannous oxide (Tin, tin oxide and inorganic compounds, except SnH4, as Sn)	2	
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	stannous oxide (Tin, (as Sn): oxide and inorganic compounds except SnH4)	2	4
Canada - British Columbia Occupational Exposure Limits	stannous oxide (Tin - Oxide and inorganic compounds, except tin hydride, as Sn)	2	
Canada - Ontario Occupational Exposure Limits	stannous oxide (Tin, as Sn Oxide and inorganic compounds, as Sn, except tin hydride)	2	
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	stannous oxide (Tin: Oxide and inorganic compounds except SnH4 (as Sn))	2	
Canada - Alberta Occupational Exposure Limits	stannous oxide (Tin, as Sn: Oxide and inorganic compounds except tin hydride)	2	
US OSHA Permissible Exposure Levels (PELs) - Table Z1	stannous oxide (Tin, inorganic compounds (except oxides) (as Sn))	2	

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
· fluorocaoutchouc
· 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 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
Solid.
Does not mix with water.
Sinks in water.

State	Divided solid	Molecular Weight	134.70
Melting Range (°F)	1976 (600 mm Hg)	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Immiscible
Flash Point (°F)	Not applicable	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	6.3
Lower Explosive Limit (%)	Not applicable	Relative Vapor Density (air=1)	Not applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not applicable

APPEARANCE
Brownish-black powder with no odour; does not mix with water. Soluble in acids, in concentrated solution of caustic alkalies. Also occurs as a

red metastable orthorhombic form.

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.
· Reacts with acids producing flammable / explosive hydrogen (H2) gas.
Reacts violently with evolution of heat when oxidised by chlorine, sulfur or potassium peroxide. Avoid contact with turpentine, amines and zinc in the zinc in the presence of steam. Contact with mineral acids liberates heat and hydrogen gas.

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

Section 11 - TOXICOLOGICAL INFORMATION

stannous oxide

TOXICITY AND IRRITATION
STANNOUS OXIDE:
■ No significant acute toxicological data identified in literature search.

SKIN

stannous oxide	US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants - Skin	Skin Designation	X
stannous oxide	US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants - Skin	Skin Designation	X
stannous oxide	US - Minnesota Permissible Exposure Limits (PELs) - Skin	Skin Designation	X
stannous oxide	US OSHA Permissible Exposure Levels (PELs) - Skin	Skin Designation	X

Section 12 - ECOLOGICAL INFORMATION

No data

Section 13 - DISPOSAL CONSIDERATIONS

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 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

stannous oxide (CAS: 21651-19-4,1332-29-2) is found on the following regulatory lists;

"Canada - Nova Scotia Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits","Canada Domestic Substances List (DSL)","US - Connecticut Hazardous Air Pollutants","US - Hawaii Air Contaminant Limits","US - Minnesota Permissible Exposure Limits (PELs)","US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants","US - Washington Permissible exposure limits of air contaminants","US ACGIH Threshold Limit Values (TLV)","US NIOSH Recommended Exposure Limits (RELs)","US Toxic Substances Control Act (TSCA) - Inventory"

Section 16 - OTHER INFORMATION

Ingredients with multiple CAS Nos
Ingredient Name CAS stannous oxide 21651-19-4, 1332-29-2

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.

Issue Date: Sep-13-2010

Print Date:Mar-5-2011