

# TIN

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## 1. Product Identification

**Synonyms:** Tin; tin flake; tin granular; tin, mossy; stannum

**CAS No.:** 7440-31-5

**Molecular Weight:** 118.71

**Chemical Formula:** Sn

**Product Codes:** CHEM-117 and others

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Tin	7440-31-5	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**CAUTION! MAY BE HARMFUL IF INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

### SAF-T-DATA<sup>(tm)</sup> Ratings

Health Rating: 2 - Moderate (Life)

Flammability Rating: 2 - Moderate

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

### Potential Health Effects

There is insufficient data in the published literature to perform a complete hazard evaluation for this product. Special precautions must be used in storage, use and handling. Protective equipment should be chosen using professional judgment.

### Inhalation:

No adverse effects expected but dust may cause mechanical irritation.

### Ingestion:

Large doses may cause nausea, vomiting, and diarrhea.

### Skin Contact:

No adverse effects expected. May cause mild irritation and redness.

**Eye Contact:**

No adverse effects expected but dust may cause mechanical irritation.

**Chronic Exposure:**

Prolonged inhalation of the dust or fume may result in a benign pneumoconiosis, producing distinctive changes in the lungs with no apparent disability or complications.

**Aggravation of Pre-existing Conditions:**

No adverse health effects expected.

## 4. First Aid Measures

**Inhalation:**

Not expected to require first aid measures. Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

**Skin Contact:**

Not expected to require first aid measures. Wash exposed area with soap and water. Get medical advice if irritation develops.

**Eye Contact:**

Wash thoroughly with running water. Get medical advice if irritation develops.

## 5. Fire Fighting Measures

**Fire:**

Autoignition temperature:

Dust Cloud : 630°C (1166°F);

Dust Layer: 430°C (806°F).

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Minimum explosible concentration: 0.19 g/l Particle size and air concentration determine reactivity.

**Fire Extinguishing Media:**

USE dry sand, graphite, dolomite, sodium chloride. NEVER USE water, halogenated agents, or class A, B, or C extinguishers.

**Special Information:**

Use protective clothing and breathing equipment appropriate for the surrounding fire.

## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Avoid dust dispersal. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

2 mg/m<sup>3</sup> (TWA)

-ACGIH Threshold Limit Value (TLV):

2 mg/m<sup>3</sup> (TWA)

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

## 9. Physical and Chemical Properties

### **Appearance:**

Uniform, silvery granules, mossy flakes, strips, sheet or foil.

### **Odor:**

Odorless.

### **Solubility:**

Insoluble in water.

### **Density:**

7.31

### **pH:**

No information found.

### **% Volatiles by volume @ 21°C (70°F):**

0

### **Boiling Point:**

2507°C (4545°F)

### **Melting Point:**

231.9°C (450°F)

### **Vapor Density (Air=1):**

No information found.

### **Vapor Pressure (mm Hg):**

1 @ 1609°C (2928°F)

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Powder will oxidize, especially in the presence of moisture. Metal normally has a protective film of stannic oxide which thickens as the temperature is raised.

**Hazardous Decomposition Products:**

No hazardous decomposition products.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Halogens and halogen trifluorides, cupric nitrate, sodium and potassium peroxide, sulfur, and some acids.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

Investigated as a tumorigen.

Ingredient	Cancer Lists		IARC Category
	Known	Anticipated	
Tin (7440-31-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

Ingredient	Chemical Inventory Status - Part 1			
	TSCA	EC	Japan	Australia
Tin (7440-31-5)	Yes	Yes	No	Yes

## Chemical Inventory Status - Part 2

### Canada

Ingredient	Korea	DSL	NDSL	Phil.
Tin (7440-31-5)	Yes	Yes	No	Yes

## Federal, State & International Regulations - Part 1

### SARA 302 SARA 313

Ingredient	RQ	TPQ	List	Chemical Catg.
Tin (7440-31-5)	No	No	No	No

## Federal, State & International Regulations - Part 2

### RCRA TSCA

Ingredient	CERCLA	261.33	8(d)
Tin (7440-31-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No  
Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 1 Reactivity: 1

### Label Hazard Warning:

CAUTION! MAY BE HARMFUL IF INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

### Label Precautions:

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Avoid breathing dust.

Keep container closed.

Use with adequate ventilation.

### Label First Aid:

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.

### Product Use:

Laboratory Reagent and Consumer Hobby

### Revision Information:

No Changes.

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