



chem-supply

# Safety Data Sheet

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Infosafe No™	1CH73	Issue Date : March 2018	RE-ISSUED by CHEMSUPP
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Product Name : **TIN METAL (Foil, Granules)**

Not classified as hazardous

## 1. Identification

<b>GHS Product Identifier</b>	TIN METAL (Foil, Granules)		
<b>Company Name</b>	CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)		
<b>Address</b>	38 - 50 Bedford Street GILLMAN SA 5013 Australia		
<b>Telephone/Fax Number</b>	Tel: (08) 8440-2000 Fax: (08) 8440-2001		
<b>Recommended use of the chemical and restrictions on use</b>	Tin plated steel containers for food preservation, tin alloys (brasses and bronzes, bell metal, Babbitt metal, die casting alloy, pewter, phosphor bronze, type, and White metal), soldering alloys for electrical/electronic and general industrial applications, specialized alloys such as dental amalgams, titanium alloys used in aircraft engineering, niobium-tin and indium-tin alloys used in superconducting cables and magnets and indium-tin oxide for metallic photonic crystals, low-melting alloys for fire control, organ pipes, tin alloys are important in the production of coatings by electroplating and hot tinning (the most important of these are tin-zinc, tin-nickel, tin-cobalt, and tin-copper), tin coatings (applied to most metal surfaces by electrodeposition, while in hot-dipping, molten tin wets and adheres readily to clean iron, steel, copper, and copper-base alloys), corrosion-resistant coatings (for lead or zinc and steel), cladding, tinned wire (all copper wire that is to be rubber covered), collapsible tubes, anodes for electron plating, manufacture of chemicals (tin salts), block tin (used to coat copper cooking utensils and lead sheet, or to line lead pipe for distilled water, beer, carbonated beverages, and some chemicals), powder metallurgy applications, exothermic welding, catalysts, colours, stabilizer, cast and wrought forms, window glass manufacture ('Pilkington process') and transportation applications.		
<b>Other Names</b>	<b><u>Name</u></b>	<b><u>Product Code</u></b>	
	TIN METAL Foil 0.2mm LR	TL017	
	TIN METAL Granules LR	TL018	
<b>Other Information</b>	Stannum		
	EMERGENCY CONTACT NUMBER: +61 08 8440 2000 Business hours: 8:30am to 5:00pm. Monday to Friday.		

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

## 2. Hazard Identification

<b>GHS classification of the substance/mixture</b>	Classified as non-Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.
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## 3. Composition/information on ingredients

<b>Chemical Characterization</b>	Solid				
<b>Ingredients</b>	<b><u>Name</u></b>	<b><u>CAS</u></b>	<b><u>Proportion</u></b>	<b><u>Hazard Symbol</u></b>	<b><u>Risk Phrase</u></b>
	Tin	7440-31-5	100 %		

## 4. First-aid measures

<b>Inhalation</b>	In the unlikely event of dizziness or nausea, remove casualty to fresh air.
<b>Ingestion</b>	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.
<b>Skin</b>	Wash affected area thoroughly with copious amounts of running water. Remove contaminated clothing and wash before reuse. Seek medical attention in severe cases, or if irritation develops.
<b>Eye contact</b>	If contact with the eye(s) occurs, wash with copious amounts of water for approximately 15 minutes holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. Seek medical attention.



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<b>First Aid Facilities</b>	Maintain eye wash and normal washroom facilities.
<b>Advice to Doctor</b>	Treat symptomatically and supportively.
<b>Other Information</b>	For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

## 5. Fire-fighting measures

<b>Hazards from Combustion Products</b>	Irritating and/or highly toxic fumes and gases, tin/tin oxides.
<b>Specific Methods</b>	Use extinguishing media most appropriate for the surrounding fire. Small fire: Use dry chemical, CO <sub>2</sub> , water spray or foam.
<b>Precautions in connection with Fire</b>	Wear SCBA and structural firefighter's uniform.

## 6. Accidental release measures

<b>Personal Precautions</b>	Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.
<b>Personal Protection</b>	Wear protective clothing specified for normal operations (see Section 8)
<b>Clean-up Methods - Small Spillages</b>	Sweep up and place in a labelled container for subsequent safe disposal.

## 7. Handling and storage

<b>Precautions for Safe Handling</b>	Avoid ingestion and inhalation of dust/granules/foil. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Minimize dust generation and accumulation. Keep containers closed when not in use. Use in designated areas with adequate ventilation. Keep away from incompatibles such as oxidizing agents, acids, alkalis.
<b>Conditions for safe storage, including any incompatibilities</b>	Store in tightly closed containers, in a cool, dry, well-ventilated area away from incompatible substances. Separated from oxidising agents.

## 8. Exposure controls/personal protection

Occupational exposure limit values	Name	STEL		TWA		Footnote
		mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	
	Tin			2		
<b>Other Exposure Information</b>	A time weighted average (TWA) has been established for Tin, metal (Safe Work Australia) of 2 mg/m <sup>3</sup> . The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.					
<b>Appropriate engineering controls</b>	In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.					
<b>Respiratory Protection</b>	Usually not required. Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.					
<b>Eye Protection</b>	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.					
<b>Hand Protection</b>	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance.					
<b>Personal Protective Equipment</b>	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.					
<b>Body Protection</b>	Clean clothing or protective clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.					



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Product Name : **TIN METAL (Foil, Granules)**

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**Hygiene Measures** Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

## 9. Physical and chemical properties

<b>Form</b>	Solid
<b>Appearance</b>	Almost silver-white to gray, lustrous, malleable metal; cubic (gray); tetragonal (white); rhomboidal (tin brittle); granules, foil, or powder. At -40 °C crumbles to gray amorphous powder (gray tin); slowly changes back above 20 °C to white tin; brittle at 200 °C.
<b>Odour</b>	Odourless.
<b>Melting Point</b>	231.9 °C.
<b>Boiling Point</b>	2270 °C; 2507 °C; 2602 °C.
<b>Solubility in Water</b>	Insoluble in water.
<b>Solubility in Organic Solvents</b>	Soluble in hydrochloric acid, sulfuric acid, aqua regia, alkali; slightly soluble in dilute nitric acid.
<b>Specific Gravity</b>	7.265 (white); 5.769 (gray).
<b>Vapour Pressure</b>	1.3332 hPa at 1492 °C.
<b>Viscosity</b>	1.85 mPa.s (cP) @ 240 °C.
<b>Volatile Component</b>	0 %vol @ 21 °C
<b>Surface Tension</b>	544 mN/m (@ 231.9 °C).
<b>Flammability</b>	Non combustible material.
<b>Auto-Ignition Temperature</b>	Dust Cloud: 630 °C; Dust Layer: 430 °C.
<b>Flammable Limits - Lower</b>	> 99.99 % (powder).
<b>Explosion Properties</b>	The finely divided dust may form flammable/explosive mixtures with air. It may present a dust explosion hazard in the presence of an ignition source. Minimum explosible concentration: 0.19 g/l. Particle size and air concentration determine reactivity. Tin reacts violently or explosively with fused ammonium nitrate below 200 °C. Contact of metallic tin with turpentine may cause fires and explosions.
<b>Molecular Weight</b>	118.69.
<b>Other Information</b>	Tin has two allotropic forms at normal pressure; at -40 °C crumbles to gray amorphous powder (gray tin; alpha); slowly changes back above 20 °C to white tin (beta); brittle @ 200 °C. Transformation temp: (beta in equilibrium with alpha) 13.2 °C. Resistivity of white tin: 11.0 µ-Ohm cm @ 0 °C; 15.5 µ-Ohm cm @ 100 °C; 20.0 µ-Ohm cm @ 200 °C; 22.0 µ-Ohm cm @ mp (solid); 45.0 µ-Ohm cm @ mp (liquid).

## 10. Stability and reactivity

<b>Chemical Stability</b>	Stable against air and water under normal temperatures, pressures and conditions of handling and storage. Powder oxidizes, especially in the presence of air and moisture. At high temperatures, it burns with an intensive white flame and forms tin oxide.
<b>Conditions to Avoid</b>	Excess heat, flames, ignition sources, dust generation and incompatible materials. Powder is air and moisture sensitive.
<b>Incompatible Materials</b>	Oxidizing agents (sodium peroxide and potassium peroxide, potassium dioxide, fused ammonium nitrate below 200 °C, cupric nitrate, in the presence of water), strong acids (generation of hydrogen) (nitric acid, hydrochloric acid), strong bases, halogens and halogen trifluorides (fluorine at 100 °C, heat + chlorine, tin chloride, carbon tetrachloride, in the presence of water vapour, bromine, chlorine trifluoride in the presence of carbon, disulfur dichloride), sulfur, some extinguishing agents such as bicarbonate powder and carbon dioxide, tellurium, turpentine, water + heat, mixtures with air in the presence of an ignition source.
<b>Hazardous Decomposition Products</b>	Toxic and/or irritating fumes and gases, tin/tin oxides.
<b>Possibility of hazardous reactions</b>	Reacts with strong oxidants. Tin reacts violently or explosively with fused ammonium nitrate below 200 °C. In the presence of water, cupric nitrate and tin foil, on prolonged and intimate contact, will produce flaming and sparking. Sodium peroxide and potassium peroxide, potassium dioxide, oxidize tin with incandescence. Reacts violently with strong acids and some extinguishing agents such as bicarbonate powder and carbon dioxide. Reactive with alkalis. The violent reaction between tin and bromine is

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**Hazardous Polymerization**

controlled in halocarbon solutions. Tin /begins to burn at 100 °C in fluorine. Reaction with chlorine trifluoride, in the presence of carbon, is violent. Reacts violently with bromine trifluoride. Tin reacts violently with Iodine Bromide. When heated in Chlorine, Tin reacts, producing light and much heat. Interaction with carbon tetrachloride, in the presence of water vapour, is violent. Interaction with disulfur dichloride is violent. Reaction with sulfur is vigorous and accompanied by incandescence. Contact of metallic tin with turpentine may cause fires and explosions. The reaction between tin and tellurium attains incandescence. Experiments involving explosions of molten tin and water are described. The finely divided dust may form flammable/explosive mixtures with air. It may present a dust explosion hazard in the presence of an ignition source, when exposed to heat or by spontaneous chemical reaction with Br<sub>2</sub>, BrF<sub>3</sub>, S, Cl<sub>2</sub>, ClF<sub>3</sub>, Cu(NO<sub>3</sub>), K<sub>2</sub>O<sub>2</sub>.  
Will not occur.

## 11. Toxicological Information

<b>Ingestion</b>	May be harmful if swallowed. Ingested metallic tin exhibits only moderate toxicity due to poor absorption from the digestive tract and rapid tissue turnover. Ingestion of large doses of powdered tin may cause gastrointestinal irritation, nausea, cramps, vomiting, and diarrhoea (which may be from irritant or astringent action on the stomach), but not permanent injury. Inorganic tin salts, which may form with corrosion depending on a number of factors, including the presence of oxidising agents (oxygen, nitrate) and acids, may cause nausea, vomiting and diarrhoea, may interfere with various enzyme systems and may cause systemic effects on the central nervous system, heart and liver, if ingested in concentrations in excess of 300-500 mg/kg.
<b>Inhalation</b>	Inhalation of tin dust may cause irritation, due to mechanical action, to nose, throat and respiratory tract, with coughing. Inhaled dust or fumes may cause benign, symptomless pneumoconiosis (stannosis). This form of pneumoconiosis produces distinctive progressive x-ray changes of the lung as long as exposure persists, but there is no distinctive fibrosis, no evidence of disability, and no special complicating factors. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count.
<b>Skin</b>	May cause mild skin irritation, resulting in redness and itchiness.
<b>Eye</b>	Dust may cause eye irritation due to mechanical action, with redness and pain. Granules and foil may cause eye damage due to mechanical action.
<b>Carcinogenicity</b>	Not listed in the IARC Monographs.
<b>Reproductive Toxicity</b>	Tin [resp/skin]: animal-possible increase in subtle neurological & skeletal deformities (from: 'Reproductive Hazards of the Workplace' by Linda M. Frazier, MD, MPH & Marvin L. Hage, MD).
<b>Chronic Effects</b>	Prolonged and/or repeated contact may cause irritation and/or dermatitis. Chronic exposure to dust or fumes may have effects on the lungs, resulting in a benign pneumoconiosis (stannosis). This form of pneumoconiosis produces distinctive progressive x-ray changes of the lung as long as exposure persists, but there is no distinctive fibrosis, no evidence of disability, and no special complicating factors.

## 12. Ecological information

<b>Ecological Information</b>	No ecological problems are to be expected when the product is handled and used with due care and attention.
<b>Ecotoxicity</b>	Quantitative data on the ecological effect of this product are not available.
<b>Environmental Protection</b>	Do not allow to enter waters, waste water, or soil!

## 13. Disposal considerations

<b>Disposal Considerations</b>	Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and disposed of according to relevant local, state and federal government regulations.
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## 14. Transport information

<b>Transport Information</b>	Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.
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## 15. Regulatory information

<b>Regulatory Information</b>	Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals. Listed in the Australian Inventory of Chemical Substances (AICS).
<b>Poisons Schedule</b>	Not Scheduled



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## 16. Other Information

### Literature References

'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia.  
 Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997.  
 National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007.  
 Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011.  
 Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010.  
 Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.  
 Safe Work Australia, 'Hazardous Substances Information System, 2005'.  
 Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.  
 Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.

### Contact Person/Point

Paul McCarthy Ph. (08) 8440 2000 **DISCLAIMER STATEMENT:**  
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### Empirical Formula & Structural Formula

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