SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Trade name	Tin
Product code	None
Product list	ASTM B 339 (Grade A) ; MDL-98 ; 9725AG Alloy ; Tin Silver Solder. Hi-Tin Jewellery Alloy
Supplier	Xstrata Zinc, General Smelting Company of Canada, 1400 Norman Street, Lachine (Québec), Canada H8S 1A8
Information contact	Gino De Nobile, Chemist
Phone number (Business hours)	(514) 637-3591
Phone number (Emergency)	CANUTEC : (613) 996-6666
Synonym	Étain (French)
Name / Chemical formula	Not applicable
Chemical family	Metal
Utilisation	Tin plates, collapsable tubes, foil, soldering wires ; Making of jewelry, pewter works ; Others.

SECTION 2. HAZARDS IDENTIFICATION

WHMIS (Canada)	Not controlled
Hazard classes (categories)/Hazard statements	None
Hazards words	None
Precautionary statements	None
Other hazards	Reactive with : Acids, oxidants. Possibility of eye and skin irritation (Particules).
Environmental hazards	Toxic for aquatic life.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS No	Percentage (%)	EC No	Hazard statements
Tin	7440-31-5	80-100	231-141-8	none

SECTION 4. FIRST-AID MEASURES

Eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Consult a physician.
Skin contact	Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.
Inhalation	Remove the person from exposure. Bring to fresh air. If breathing is difficult, give oxygen. Get immediate medical attention.
Ingestion	Induce vomiting. **UNCONSCIOUS** person : **DO NOT** induce vomiting or give any liquid. **Consult a physician.**

SECTION 5. FIRE-FIGHTING MEASURES

Flash point	Not available
Flammable limits	Not available
Autoignition temperature	Not available
Products of combustion	Tin oxides
Fire hazard	Solid form : No fire hazard. Avoid melting moist metal. Dust : Flammable when exposed to heat or flames.
Explosion hazard	Not explosive (Mechanical impact ; Static discharge).
Extinguishing media	NON-FLAMMABLE. Use fire fighting materials and procedures adapted to the immediate environment.
Protective equipment	Firefighters must wear full protective clothing and self-contained breathing apparatus (SCBA).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Measures	Collect spillage.
Methods	Use appropriate tools to place spilled materials in suitable containers for reclamation or disposal. Finish cleaning by spreading water on the contaminated surface and dispose of, according to local and regional authority requirements.
Protective equipment	Dust and fumes on melting can cause health effects. If dust or fumes are present, use NIOSH approved respirators equipped with HEPA filtration (for toxic dust or mists). Gloves. Coveralls.

SECTION 7. HANDLING AND STORAGE

Handling	**DO NOT** ingest or inhale dust. Wear adequate protective clothing. Wear approved respirators if adequate ventilation cannot be provided. If you feel unwell **:** Seek medical advice immediately and provide medical personnel with a copy of this SDS.
Conditions for storage	Away from : incompatible substances (Acids, oxidizing substances).

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

			Control parameters		
			ACGIH (U.S.) 2011	OSHA (U.S.)	QUEBEC (CA)
Name	CAS No	Percentage (%)	TLV-TWA (mg/m^3)	PEL-TWA (mg/m^3)	TWAEV (mg/m^3)
Tin	7440-31-5	80-100	2 (Sn)	2 (metal, compounds)	2 (metal)

Note : **Tin :** ACGIH TLV TWA : Metal, oxide, inorganic compounds (Sn) except SnH$_4$. OSHA PEL-TWA : Metal, inorganic compounds (Sn) except oxides. NIOSH REL-TWA (≤10 hours) : 2 mg/m^3 (Except oxides) ; IDLH : 100 mg/m^3.

Consult local authorities for acceptable exposure limits

Engineering controls Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below recommended exposure limits.

Individual protection Safety goggles. Coveralls. Work gloves and boots. Dust respirator. Be sure to use a NIOSH approved respirator or equivalent when concentrations exceed occupational exposure limits.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance	Solid (Bar, ingot, wire, plate, anode)	Odour	Odourless
Molecular weight	Not applicable	Taste	Not applicable
pH (1% soln/water)	Not applicable	Colour	Silver yellowish
Boiling point	**Tin :** 2 507°C (4 544.6°F)	Volatility	Not available
Melting point	231.67°C (449°F) to 427°C (800°F approx.)	% Moisture	Not applicable
Critical temperature	Not available	Odour threshold	Not available
Specific gravity	7.31 (Water = 1)	Water/Oil dist. Coeff.	Not available
Vapour pressure	1 mm Hg at 1 492°C	Ionicity (in water)	Not available
Vapour density	Not available	Dispersion	Not available
Solubility	Very slightly (Water)		

SECTION 10. STABILITY AND REACTIVITY

Stability Yes (Under normal conditions of ambiant temperature)

Reactivity Reactive or incompatible with : Acids.

Dangerous decomposition Tin oxides

Conditions to avoid Acids

Dangerous polymerization No

Materials to avoid **Tin :** Reacts violently under certain conditions with : Chlorine, bromine, trifluoride (Chlorine, bromine), acids, oxidants. Can react with some extinguishing agents (Bicarbonate powder, carbon dioxide).

NOTE : This list of products is not exhaustive. Verify technical documents to determine any incompatibilities with your process.

Corrosivity No

SECTION 11. TOXICOLOGICAL INFORMATION

Routes of entry Ingestion. Inhalation. Eyes and skin contact.

Carcinogenicity **Tin :** NOT A CARCINOGEN (IARC, OSHA, NTP) ; NOT LISTED (ACGIH).

Mutagenicity Not applicable

Teratogenicity Not applicable

Acute toxicity **Tin :** UNREPORTED ROUTE acute (LoTD) : 250 mg/kg (Human). (RTECS).

Acute effects Solid form : No health hazards. Conditions and work practices which generate dust or fumes should be avoided or controlled. Other forms : Dangerous (Ingestion, inhalation).

Chronic effects No known effects from chronic exposure. Repeated or prolonged exposure (Normal work conditions) : Do not aggravated medical conditions.

Tin : Low toxicity for humans. Chronic inhalation of oxide (Dust, fume) may cause stannosis (Benign pneumoconiosis) without any pulmonary functional impairment. Other sensitive organs : Kidneys, central nervous system.

Toxicity Persons with the following pre-existing conditions warrant particular attention :

Tin : Respiratory system.

Eating, drinking and smoking must be prohibited in areas where this material is handled and processed. Wash hands and face before eating, drinking and smoking.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity **Heavy metals :** Harmful to aquatic life.

Toxicity to animals **Tin :** UNREPORTED ROUTE acute (LoTD) : 250 mg/kg (Human). (RTECS).

Mobility (Soil)	Not applicable
Persistence and degradability	Not applicable
Bioaccumulation	Not applicable
Biodegradation products	Not biodegradable
Biodegradation products (Toxicity)	Not applicable
Remarks on environment	None
BOD5 and COD	Not available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	Recycle to process, if possible. P501-Dispose of contents/container in full compliance with Federal, Provincial and local regulations.

SECTION 14. TRANSPORT INFORMATION

TDG (Pictograms)	Not regulated (Canada)
PIN	Not applicable
Special provisions (Transport)	Not applicable

SECTION 15. REGULATORY INFORMATION

Labelling (GHS)	Regulation (EC) No 1272/2008 CLP : Not listed.
Labeling (DSD)	EU (Regulation 67/548/EEC) : Not listed. EU: Consolidated Inventories : Listed Tin : EU Consolidated Inventories : EC Number 231-141-8 Not classified in the Annex I of Directive 67/548/EEC Not listed in the Annex I of Council Regulation No (EC) 304/2003 Not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93
Risk phrases (DSD)	None
Safety phrases (DSD)	None
CEPA DSL (CANADA)	CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) : on the Domestic Substances List (DSL) ; acceptable for use under the provisions of CEPA.
Regulation (U.S.A.)	TSCA (EPA, Toxic Substance Control Act) Chemical Inventory (40 CFR710) : Listed. Tin
Classifications HCS (U.S.A.)	Not controlled

NFPA (National Fire Protection Association) (U.S.A.)

Fire Hazard	0	Reactivity	0	Health	0	Special Hazard

SECTION 16. OTHER INFORMATION

References

- TLVs and BEIs (2011). Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices. ACGIH, Cincinnati, OH – http://www.acgih.org
- CCOHS (2011) - Canadian Centre for Occupational Health and Safety - http://www.ccohs.ca/
- CSST (2011) - Commission de la Santé et de la Sécurité du Travail (Québec). Service du répertoire toxicologique http://www.reptox.csst.qc.ca/
- ESIS : C&L (Classification and Labelling), substances ou préparations selon la Directive 67/548/EEC (substances) et 1999/45/EC (préparations).
- ESIS : EINECS (European Inventory of Existing Commercial chemical Substances) O.J. C 146A, 15.6.1990
- ESIS : EINECS corrections publiées dans O.J. C 54/13 01.03.2002, 2002/C54/08.
- Guidance on the Application of the CLP Criteria. Guidance to Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging (CLP) of substances and mixtures. 25/08/2009. ECHA Reference : ECHA-09-G-02-EN. © European Chemicals Agency, 2009.
- ERG (2008). Emergency Response Guidebook, U.S. Department of Transportation, Transport Canada, et le Secretariat of Communications and Transportation of Mexico
- Guidance on the Application of the CLP Criteria. Guidance to Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging (CLP) of substances and mixtures. 25/08/2009. ECHA Reference : ECHA-09-G-02-EN. © European Chemicals Agency, 2009.
- HSDB (2011) - Hazardous Substances Data Bank. TOXNET® Network of databases on toxicology, hazardous chemicals, and environmental health. NLM Databases & Electronic Resources, U.S. National Library of Medicine, NHI, 8600 Rockville Pike, Bethesda, MD 20894 http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB
- IARC - Monographs on the Evaluation of Carcinogenic Risks to Humans (collection) - http://www-cie.iarc.fr/
- Merck Index (1999). Merck & CO., Inc, 12th edition
- NIOSH U.S. (2011) - Pocket Guide to Chemical Hazards - http://www.cdc.gov/niosh/npg/
- Patty's Industrial Hygiene and Toxicology, 3rd Revised Edition
- Règlement sur les produits contrôlés (Canada)
- REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing. Directives 67/548/EEC and

1999/45/EC, and amending Regulation (EC) No 1907/2006. (Text with EEA relevance). Official Journal of the European Union. L353 p1-1355, 1.12.2008.
- RTECS (2011). Registry of Toxic Effects of Chemical Substances, NIOSH, CDC
- Toxicologie industrielle & intoxication professionnelle, 3e édition, Lauwerys
- TSCA (2011) - U.S. EPA Toxic Substance Control Act, Chemical Inventory. System of Registries (SoR), Substance Registry Services, http://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/substancesearch/search.do

Glossary

CSST : Commission de la Santé et de la Sécurité du Travail (Québec).
HSDB : Hazardous Substances Data Bank.
IARC : International Agency for Research on Cancer.
NIOSH : National Institute of Occupational Safety and Health.
NTP : U.S. National Toxicology Program.
RTECS : Registry of Toxic Effects of Chemical Substances
STOT : Specific target organ toxicity

Note

No specific studies have been performed on this mixture. For your protection, we suggest that you test it before using in your process.

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