



This Safety Data Sheet complies with EC Directives 91/155 and 1272/2008

SECTION 1. IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY

Product name	Tin
Chemical formula	Sn
Synonym	None
EC # (European Chemical Substance)	231-141-8
CAS # (Chemical Abstracts Service)	7440-31-5
Use of the substance	Electronic and semiconductor application
Supplier/manufacturer	Firebird Technologies Inc., a division of 5N Plus Inc. 9200 Industrial Road Trail, British Columbia Canada V1R 4X7
Contact information	Maxime Cossette, 5N Plus Inc.
Telephone number	+ 1 514 856 0644 - 2395
E-mail	ehs@5nplus.com
Telephone number (emergency)	CANUTEC: +1 613 996 6666 (collect calls are accepted)
Website	www.5nplus.com

SECTION 2. HAZARDS IDENTIFICATION

Physical state	Solid
Colour	Gray
Risk status	Low toxicity
Emergency overview	Tin is not considered an industrial health hazard, it has low toxicity.
Routes of entry	Ingestion, inhalation
Potential acute health effects	
Eyes	Exposure to particulates may cause irritation.
Skin	Exposure to particulates may cause skin irritation.
Inhalation	Inhalation of particulates may cause respiratory tract irritation.
Ingestion	May cause gastrointestinal irritation.
Potential chronic health effects	The substance may have effects on the lungs , resulting in a benign pneumoconiosis (stannosis).

For toxicological information, see Section 11

SECTION 3. COMPOSITION OF/INFORMATION REGARDING CONSTITUENTS

Name	Symbol	CAS #	EC #	IUPAC Name	Percentage (%)	Classification
Tin	Sn	7440-31-5	231-141-8	Name	100	Not classified

SECTION 4. FIRST AID

Eye contact	Check for and remove any contact lenses. In the event of contact with eyes, rinse immediately with plenty of water. Get medical attention.
Skin contact	In case of contact, wash affected area with soap and large amounts of water. Remove and wash any contaminated clothing. Dust may provoke skin irritation.
Inhalation	If inhaled, move to fresh air. Get immediate medical attention.
Ingestion	Rare in industry. If the person is unconscious, do not give anything to drink or induce vomiting. Get immediate medical attention.
Note to attending physician	There is no specific antidote. Please contact poison center.

SECTION 5. FIRE FIGHTING MEASURES

Flammability of the product	Combustible in the form of dust when exposed to heat
Products of combustion	May evolve metal oxides fumes above melting point
Extinguishing media	
Suitable	Special powder, dry sand.
Not suitable	Bicarbonate powder and carbon dioxide (react violently).
Special exposure hazards	Metal oxides fumes can form in the event of fire.
Special protective equipment for firefighters	Firefighters should wear self-contained breathing apparatus (SCBA).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Safety glasses and impervious gloves. Wear at least a P2 type particle filter respirator if the airborne concentrations are above the exposure limit. If the airborne concentrations are unknown, wear approved self-contained breathing apparatus.

Environmental precautions

Avoid dispersal of spilled material. Prevent runoff and contact with soil, waterways, drains or sewers.

Methods for cleaning-up

Allow molten metal to cool and harden before cleanup. Once solidified vacuum the spilled material with an appropriate vacuum and place in an appropriate container for disposal in a safe place. Avoid creating dusty conditions and prevent wind dispersal.

SECTION 7. HANDLING AND STORAGE

Handling

Avoid contact with skin. Wear protective eyewear and, in the event of insufficient ventilation, a suitable breathing apparatus. Do not eat, drink, or smoke during work. Wash hands, forearms and face thoroughly after handling this product and before eating, smoking or using the lavatory.

Storage

Keep in tightly closed containers. Keep in a dry and well ventilated area away from incompatible material.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits values		
Product Name	8-hour total weight average (TWA) permissible exposure limit (PEL)	Short Term Exposure Limits (STELs)
Tin	<p>AUSTRIA : 2 mg/m³ respirable fraction</p> <p>BELGIUM : 2 mg/m³</p> <p>FINLAND : 2 mg/m³</p> <p>HUNGARY : 2 mg/m³</p> <p>THE NETHERLANDS : 2 mg/m³</p> <p>NEW ZEALAND : 2 mg/m³</p> <p>NORWAY : 1 mg/m³</p> <p>THE PHILIPPINES : 2 mg/m³</p> <p>POLAND : 2 mg/m³</p> <p>SWITZERLAND : 2 mg/m³</p> <p>THAILAND : 2 mg/m³</p> <p>USA - ACGIH : 2 mg/m³</p> <p>GERMANY : 2 mg/m³ respirable fraction</p> <p>UNITED KINGDOM : 2 mg/m³</p>	N/A

Occupational exposure controls

Environmental exposure controls

Use only in well ventilated areas. If handling generates dust, fumes, Gases, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Eye protection

Safety glasses

Skin protection

The choice of skin protection gear will depend on the nature of the work to perform.

Respiratory protection

If there is a risk of exceeding exposure limits, wear at least a P2 type particle filter respirator.

Hand protection

Natural rubber (latex)

Personal safety equipment pictograms



SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Very malleable and ductile metal, lustrous soft

Odor

Odorless

Color

Silver-white,

Molecular weight

118.69

Molecular formula

Sn

Melting point

231.9°C

pH

Not applicable

Boiling point

2507°C

Flash point

Not applicable

Flammability

Not flammable

Oxidizing properties

Not applicable

Vapor pressure

0 mm/Hg @ 25°C

Relative density	7.265 g/cm ³
Solubility	
Water solubility	Insoluble
Fat solubility	Insoluble
Partition coefficient	Not applicable
Viscosity	Not available

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	Reacts violently with oxidants, strong acids, bromine, sulfur and some extinguishing agents.
Materials to avoid	oxidants, strong acids, bromine, sulfur and some extinguishing agents such as bicarbonate powder and
Hazardous decomposition products	May evolve metal oxides fumes.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological data

Product/ingredient name	Test	Result	Route/Species
Tin	Not available	Not available	Not available

Acute effects

Eyes	Exposure to particulates may cause irritation.
Skin	Exposure to particulates may cause skin irritation.
Ingestion	Inhalation of particulates may cause respiratory tract irritation.
Inhalation	May cause gastrointestinal irritation.

Potential chronic health effects

Carcinogenicity	Not applicable
Mutagenicity	Not applicable
Teratogenic effects	Not applicable

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity data

Product/ingredient name	Species	Period	Test (LC50)
Tin	Not available	Not available	Not available

Environmental precautions	Observe environmental regulations in place.
Breakdown products	This product is insoluble in water
Toxicity of biodegradation products	Not available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste disposal	The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and prevent runoff and contact with soil, waterways, drains or sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements.
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SECTION 14. TRANSPORTATION INFORMATION

Regulatory information	Proper shipping name	Class	UN Number	PG	Labeling
IATA Class	Not classified	Not classified	Not classified	Not classified	Not classified
UN/IMDG	Not classified	Not classified	Not classified	Not classified	Not classified
ADR/RID Class	Not classified	Not classified	Not classified	Not classified	Not classified
GGVSE	Not classified	Not classified	Not classified	Not classified	Not classified

SECTION 15. REGULATORY INFORMATION

EU Regulation	<i>This chemical substance is not classified according to the criteria of the EC Directive 1272/2008</i>
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Hazard Statements	Not applicable
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SECTION 16. OTHER INFORMATION

References	Directive 91/155/EEC European Commission's Joint Research Centre Databases EPA Ecotox Databases
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Author	Maxime Cossette
Title	EH&S Manager – 5N Plus Inc.
Email	maxime.cossette@5nplus.com

Tel.	+ 1 514 856 0644, ext. 2395
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Address information request to	EH&S Department – 5N Plus Inc. 4385 Garand Street, Saint-Laurent, Québec, Canada H4R 2B4 Phone : +1 514 856 0644 email : ehs@5nplus.com

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