



Permite; Lojic +; GS-80; GS-80 Spherical; F400; New Ultrafine; SDI Admix; SDI Spherical; SDI Alloy, and Ultratabs- Alloy powder and Tablets

SDI Limited

Version No: 6.1.1.1
Safety Data Sheet

Issue Date: 12/01/2016
Print Date: 23/03/2016
Initial Date: Not Available
L.GHS.CAN.EN

SECTION 1 IDENTIFICATION

Product Identifier

Product name	Permite; Lojic +; GS-80; GS-80 Spherical; F400; New Ultrafine; SDI Admix; SDI Spherical; SDI Alloy, and Ultratabs- Alloy powder and Tablets
Synonyms	Not Available
Other means of identification	Not Available

Recommended use of the chemical and restrictions on use

Relevant identified uses	For filling of cavitated teeth by dental professionals.
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Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	SDI Limited	SDI Brazil Industria E Comercio Ltda	SDI Germany GmbH
Address	3-15 Brunsdon Street VIC Bayswater 3153 Australia	Rua Dr. Virgilio de Carvalho Pinto, 612 São Paulo CEP 05415-020 Brazil	Hansestrasse 85 Cologne D-51149 Germany
Telephone	+61 3 8727 7111 (Business Hours)	+55 11 3092 7100	+49 0 2203 9255 0
Fax	+61 3 8727 7222	+55 11 3092 7101	+49 0 2203 9255 200
Website	www.sdi.com.au	www.sdi.com.au	www.sdi.com.au
Email	info@sdi.com.au	brasil@sdi.com.au	germany@sdi.com.au

Registered company name	SDI (North America) Inc.
Address	1279 Hamilton Parkway IL Itasca 60143 United States
Telephone	+1 630 361 9200 (Business hours)
Fax	Not Available
Website	Not Available
Email	USA.Canada@sdi.com.au

Emergency phone number

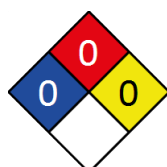
Association / Organisation	SDI Limited	Not Available	Not Available
Emergency telephone numbers	+61 3 8727 7111	Not Available	Not Available
Other emergency telephone numbers	ray.cahill@sdi.com.au	Not Available	Not Available

Association / Organisation	Not Available
Emergency telephone numbers	+61 3 8727 7111
Other emergency telephone numbers	Not Available

SECTION 2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

NFPA 704 diamond



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

Permite; Lojic +; GS-80; GS-80 Spherical; F400; New Ultrafine; SDI Admix; SDI Spherical; SDI Alloy, and Ultratabs- Alloy powder and Tablets

Classification	Not Applicable
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Label elements

GHS label elements	Not Applicable
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SIGNAL WORD	NOT APPLICABLE
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Hazard statement(s)

Not Applicable

Hazard(s) not otherwise specified

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**Substances**

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
		tablets and alloy powder contains
7440-22-4	40-70	<u>silver</u>
7440-31-5	20-30	<u>tin</u>
7440-50-8	5-30	<u>copper</u>
7440-74-6	0-0.5	<u>indium</u>
7440-66-6	0-0.5	<u>zinc</u>

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4 FIRST-AID MEASURES**Description of first aid measures**

Eye Contact	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> ▶ Wash out immediately with fresh running water. ▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▶ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation.
Inhalation	<ul style="list-style-type: none"> ▶ If dust is inhaled, remove from contaminated area. ▶ Encourage patient to blow nose to ensure clear breathing passages. ▶ Ask patient to rinse mouth with water but to not drink water. ▶ Seek immediate medical attention.
Ingestion	<p>Seek medical attention.</p> <p>Ingestion may result in nausea, abdominal irritation, pain and vomiting</p>

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIRE-FIGHTING MEASURES**Extinguishing media**

- ▶ Water spray or fog.
- ▶ Foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.

Special hazards arising from the substrate or mixture

Continued...

Permite; Lojic +; GS-80; GS-80 Spherical; F400; New Ultrafine; SDI Admix; SDI Spherical; SDI Alloy, and Ultratabs- Alloy powder and Tablets

Fire Incompatibility	None known.
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Special protective equipment and precautions for fire-fighters

Fire Fighting	<ul style="list-style-type: none"> Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves in the event of a fire. Prevent, by any means available, spillage from entering drains or water courses. Use fire fighting procedures suitable for surrounding area. DO NOT approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use.
Fire/Explosion Hazard	<p>May emit poisonous fumes.</p> <p>Articles and manufactured articles may constitute a fire hazard where polymers form their outer layers or where combustible packaging remains in place. Certain substances, found throughout their construction, may degrade or become volatile when heated to high temperatures. This may create a secondary hazard.</p>

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Minor Spills	<ul style="list-style-type: none"> Clean up all spills immediately. Avoid breathing dust and contact with skin and eyes. Wear protective clothing, gloves, safety glasses and dust respirator. Use dry clean up procedures and avoid generating dust. Sweep up, shovel up or Vacuum up (consider explosion-proof machines designed to be grounded during storage and use). Place spilled material in clean, dry, sealable, labelled container.
Major Spills	<p>Minor hazard.</p> <ul style="list-style-type: none"> Clear area of personnel. Alert Fire Brigade and tell them location and nature of hazard. Control personal contact with the substance, by using protective equipment as required. Prevent spillage from entering drains or water ways. Contain spill with sand, earth or vermiculite. Collect recoverable product into labelled containers for recycling. Absorb remaining product with sand, earth or vermiculite and place in appropriate containers for disposal. Wash area and prevent runoff into drains or waterways. If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	<ul style="list-style-type: none"> Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked. DO NOT allow material to contact humans, exposed food or food utensils. Avoid contact with incompatible materials. When handling, DO NOT eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Launder contaminated clothing before re-use. Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Other information	<ul style="list-style-type: none"> Store away from incompatible materials. <p>Store in a dry and well ventilated-area, away from heat and sunlight.</p>

Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> DO NOT repack. Use containers supplied by manufacturer only. <p>Store below 25 deg. C.</p>
Storage incompatibility	<ul style="list-style-type: none"> Avoid strong acids, acid chlorides, acid anhydrides and chloroformates.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	silver	Silver, metal and soluble compounds (as Ag)	0.01 mg/m3 / --- ppm	0.03 mg/m3 / --- ppm	Not Available	Not Available

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Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	silver	Selenium compounds (as Se)	0.2 mg/m3 / --- ppm	0.2 mg/m3 / --- ppm	Not Available	Not Available
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	silver	Silver, metal	0.1 mg/m3	0.3 mg/m3	Not Available	Not Available
Canada - (English)	silver	Silver, metal	0.1 mg/m3	0.3 mg/m3	Not Available	Not Available
Canada - Nova Scotia Occupational Exposure Limits	silver	Silver - Elemental / Metal	0.1 mg/m3	Not Available	Not Available	TLV Basis: argyria
Canada - Prince Edward Island Occupational Exposure Limits	silver	Silver, and compounds - Metal, dust and fume	0.1 mg/m3	Not Available	Not Available	TLV® Basis: Argyria
Canada - Prince Edward Island Occupational Exposure Limits	silver	Silver, and compounds - Soluble compounds, as Ag	0.01 mg/m3	Not Available	Not Available	TLV® Basis: Argyria
Canada - Prince Edward Island Occupational Exposure Limits	silver	Selenium and compounds, as Se	0.2 mg/m3	Not Available	Not Available	TLV® Basis: Eye & URT irr
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	silver	Silver / Silver Metal	0.1 mg/m3	Not Available	Not Available	Not Available
Canada - Alberta Occupational Exposure Limits	silver	Silver - Metal	0.1 mg/m3	Not Available	Not Available	Not Available
Canada - British Columbia Occupational Exposure Limits	silver	Silver and Compounds (as Ag)	0.01 mg/m3	0.03 mg/m3	Not Available	Not Available
Canada - British Columbia Occupational Exposure Limits	silver	Selenium and compounds, as Se	0.1 mg/m3	Not Available	Not Available	Not Available
Canada - British Columbia Occupational Exposure Limits	silver	Particles (Insoluble or Poorly Soluble) Not Otherwise Classified (PNOC)	10 mg/m3	Not Available	Not Available	(N) - the 8-hour TWA listed in the Table is for the total dust. The substance also has an 8-hour TWA of 3 mg/m3 for the respirable fraction.
Canada - Ontario Occupational Exposure Limits	silver	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified (PNOS)	10, 3 mg/m3	Not Available	Not Available	Not Available
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	tin	Tin, organic compounds (as Sn) - Skin	0.1 mg/m3 / --- ppm	0.2 mg/m3 / --- ppm	Not Available	Not Available
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	tin	Tin, (as Sn): / Tin, (as Sn): metal	2 mg/m3	4 mg/m3	Not Available	Not Available
Canada - (English)	tin	Tin, (as Sn): metal	2 mg/m3	4 mg/m3	Not Available	Not Available
Canada - Nova Scotia Occupational Exposure Limits	tin	Tin - Metal	2 mg/m3	Not Available	Not Available	Not Available
Canada - Prince Edward Island Occupational Exposure Limits	tin	Silver, and compounds - Metal, dust and fume	0.1 mg/m3	Not Available	Not Available	TLV® Basis: Argyria
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	tin	Tin / Tin Metal	2 mg/m3	Not Available	Not Available	Not Available
Canada - Alberta Occupational Exposure Limits	tin	Tin, as Sn: Metal	2 mg/m3	Not Available	Not Available	Not Available
Canada - British Columbia Occupational Exposure Limits	tin	Tin - Metal	2 mg/m3	Not Available	Not Available	Not Available
Canada - Ontario Occupational Exposure Limits	tin	Tin, as Sn - Metal	2 mg/m3	Not Available	Not Available	Not Available
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	copper	Selenium compounds (as Se)	0.2 mg/m3 / --- ppm	0.2 mg/m3 / --- ppm	Not Available	Not Available
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	copper	Cobalt metal, dust and fume (as Co)	0.05 mg/m3 / --- ppm	0.15 mg/m3 / --- ppm	Not Available	Not Available
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	copper	Copper - Fume / Copper - Dusts and mists (as Cu)	0.2 mg/m3 / 1 mg/m3 / --- ppm	0.2 mg/m3 / 2 mg/m3 / --- ppm	Not Available	Not Available
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	copper	Copper, (as Cu): fume / Copper, (as Cu): dusts and mists	0.2 mg/m3 / 1 mg/m3	0.6 mg/m3 / 3 mg/m3	Not Available	Not Available
Canada - Saskatchewan Occupational Health and Safety Regulations - Designated Chemical	copper	Cobalt and cobalt compounds	Not Available	Not Available	Not Available	Not Available

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Substances						
Canada - (English)	copper	Copper, (as Cu): fume / Copper, (as Cu): dusts and mists / Copper, (as Cu): Cotton dust, raw	0.2 mg/m3 / 1 mg/m3	0.6 mg/m3 / 3 mg/m3	Not Available	Not Available
Canada - Nova Scotia Occupational Exposure Limits	copper	Selenium - Compounds (as Se)	0.2 mg/m3	Not Available	Not Available	TLV Basis: eye & upper respiratory tract irritation
Canada - Nova Scotia Occupational Exposure Limits	copper	Copper - Fume (as Cu) / Copper - Dusts and/or mists (as Cu)	0.2 mg/m3 / 1 mg/m3	Not Available	Not Available	TLV Basis: irritation; GI; metal fume fever
Canada - Nova Scotia Occupational Exposure Limits	copper	Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles / Particles (Insoluble or Poorly Soluble) [NOS] Respirable particles	10 mg/m3 / 3 mg/m3	Not Available	Not Available	See Appendix B current TLV/BEI Book
Canada - Prince Edward Island Occupational Exposure Limits	copper	Copper - Fume, as Cu / Copper - Dusts and mists, as Cu	0.2 mg/m3 / 1 mg/m3	Not Available	Not Available	TLV® Basis: Irr; GI; metal fume fever; BEI
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	copper	Copper, fume (as Cu) / Copper, dusts & mists (as Cu)	0.2 mg/m3 / 1 mg/m3	Not Available	Not Available	Not Available
Canada - Alberta Occupational Exposure Limits	copper	Copper - Fume / Copper - Dusts/mists, as Cu	0.2 mg/m3 / 1 mg/m3	Not Available	Not Available	Not Available
Canada - British Columbia Occupational Exposure Limits	copper	Copper - Dusts and mists, as Cu / Copper - Fume, as Cu	1 mg/m3 / 0.2 mg/m3	Not Available	Not Available	Not Available
Canada - Ontario Occupational Exposure Limits	copper	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified (PNOS)	10, 3 mg/m3	Not Available	Not Available	Not Available
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	indium	Indium and compounds (as In)	0.1 mg/m3 / --- ppm	0.3 mg/m3 / --- ppm	Not Available	Not Available
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	indium	Indium and Compounds, (as In)	0.1 mg/m3	0.3 mg/m3	Not Available	T20 (Indium pho-sphide)
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	indium	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Inhalable fraction++ / Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Respirable fraction++	10 mg/m3 / 3 mg/m3	20 mg/m3 / 6 mg/m3	Not Available	Not Available
Canada - (English)	indium	Indium and Compounds, (as In)	0.1 mg/m3	0.3 mg/m3	Not Available	Schedule R (Indium pho- sphide)
Canada - (English)	indium	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Inhalable fraction / Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Respirable fraction	10 mg/m3 / 3 mg/m3	20 mg/m3 / 6 mg/m3	Not Available	Not Available
Canada - Nova Scotia Occupational Exposure Limits	indium	Indium and compounds (as In)	0.1 mg/m3	Not Available	Not Available	TLV Basis: pulmonary edema; pneumonitis; dental erosion; malase
Canada - Nova Scotia Occupational Exposure Limits	indium	Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles / Particles (Insoluble or Poorly Soluble) [NOS] Respirable particles	10 mg/m3 / 3 mg/m3	Not Available	Not Available	See Appendix B current TLV/BEI Book
Canada - Prince Edward Island Occupational Exposure Limits	indium	Indium and compounds, as In	0.1 mg/m3	Not Available	Not Available	TLV® Basis: Pulm edema; pneumonitis; dental erosion; malaise
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	indium	Indium and compounds (as In)	0.1 mg/m3	Not Available	Not Available	Not Available
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	indium	Dust, inert or nuisance particulates / Nuisance particulates / Particulates Not Otherwise Classified (PNOC)	10 mg/m3	Not Available	Not Available	Not Available
Canada - Alberta Occupational Exposure Limits	indium	Indium & compounds, as In	0.1 mg/m3	Not Available	Not Available	Not Available
Canada - Alberta Occupational Exposure Limits	indium	Particulate Not Otherwise Regulated - Total / Particulate Not Otherwise Regulated - Respirable	10 mg/m3 / 3 mg/m3	Not Available	Not Available	Not Available
Canada - British Columbia Occupational Exposure Limits	indium	Indium and compounds, as In	0.1 mg/m3	Not Available	Not Available	Indium phosphide is an IARC group 2A carcinogen
Canada - British Columbia Occupational Exposure Limits	indium	Particles (Insoluble or Poorly Soluble) Not Otherwise Classified (PNOC)	10 mg/m3	Not Available	Not Available	(N) - the 8-hour TWA listed in the Table is for the total dust. The substance also has an 8-hour TWA of 3 mg/m3 for the respirable fraction.
Canada - Ontario Occupational Exposure Limits	indium	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified (PNOS)	10, 3 mg/m3	Not Available	Not Available	Not Available
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	zinc	Aluminum and compounds (as Al): Metal dust	10 mg/m3	20 mg/m3	Not Available	Not Available
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	zinc	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Inhalable fraction++ / Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Respirable fraction++	10 mg/m3 / 3 mg/m3	20 mg/m3 / 6 mg/m3	Not Available	Not Available

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Canada - (English)	zinc	Aluminum and compounds (as Al): Metal dust	10 mg/m3	20 mg/m3	Not Available	Not Available
Canada - (English)	zinc	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Inhalable fraction / Particles (Insoluble or Poorly Soluble) Not Otherwise Specified: Respirable fraction	10 mg/m3 / 3 mg/m3	20 mg/m3 / 6 mg/m3	Not Available	Not Available
Canada - Nova Scotia Occupational Exposure Limits	zinc	Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles / Particles (Insoluble or Poorly Soluble) [NOS] Respirable particles	10 mg/m3 / 3 mg/m3	Not Available	Not Available	See Appendix B current TLV/BEI Book
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	zinc	Dust, inert or nuisance particulates / Nuisance particulates / Particulates Not Otherwise Classified (PNOC)	10 mg/m3	Not Available	Not Available	Not Available
Canada - Alberta Occupational Exposure Limits	zinc	Particulate Not Otherwise Regulated - Total / Particulate Not Otherwise Regulated - Respirable	10 mg/m3 / 3 mg/m3	Not Available	Not Available	Not Available
Canada - British Columbia Occupational Exposure Limits	zinc	Particles (Insoluble or Poorly Soluble) Not Otherwise Classified (PNOC)	10 mg/m3	Not Available	Not Available	(N) - the 8-hour TWA listed in the Table is for the total dust. The substance also has an 8-hour TWA of 3 mg/m3 for the respirable fraction.
Canada - Ontario Occupational Exposure Limits	zinc	Particles (Insoluble or Poorly Soluble) Not Otherwise Specified (PNOS)	10, 3 mg/m3	Not Available	Not Available	Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
silver	Silver	0.1 mg/m3	0.1 mg/m3	11 mg/m3
tin	Tin	6 mg/m3	67 mg/m3	400 mg/m3
copper	Copper	1 mg/m3	1 mg/m3	45 mg/m3
indium	Indium	0.1 mg/m3	0.1 mg/m3	0.45 mg/m3
zinc	Zinc	1.9 mg/m3	21 mg/m3	120 mg/m3

Ingredient	Original IDLH	Revised IDLH
silver	N.E. mg/m3 / Unknown mg/m3 / N.E. ppm / Unknown ppm	10 mg/m3 / 1 mg/m3
tin	Unknown mg/m3 / 400 mg/m3 / Unknown ppm	25 mg/m3 / 100 mg/m3
copper	N.E. mg/m3 / N.E. ppm	100 mg/m3
indium	Not Available	Not Available
zinc	Not Available	Not Available

MATERIAL DATA**Exposure controls**

Appropriate engineering controls	Articles or manufactured items, in their original condition, generally don't require engineering controls during handling or in normal use. Exceptions may arise following extensive use and subsequent wear, during recycling or disposal operations where substances, found in the article, may be released to the environment.
Personal protection	  
Eye and face protection	<ul style="list-style-type: none"> ▶ Safety glasses with side shields ▶ Chemical goggles. ▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]
Skin protection	See Hand protection below
Hands/feet protection	Wear impervious gloves.
Body protection	See Other protection below
Other protection	No special equipment needed when handling small quantities. OTHERWISE: <ul style="list-style-type: none"> ▶ Overalls. ▶ Barrier cream. ▶ Eyewash unit.
Thermal hazards	Not Available

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Appearance	Bluish-grey silver alloy powder and silver-grey compressed silver alloy powder (tablets) with no odour, insoluble in water.
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Physical state	Manufactured	Relative density (Water = 1)	Not Available
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Applicable
pH (as supplied)	Not Applicable	Decomposition temperature	Not Applicable
Melting point / freezing point (°C)	Undetermined (>500)	Viscosity (cSt)	Not Applicable
Initial boiling point and boiling range (°C)	Undetermined (>900)	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	Not Applicable	Taste	Not Available
Evaporation rate	Not Applicable	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Applicable	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Applicable	Volatile Component (%vol)	Not Applicable
Vapour pressure (kPa)	Not Applicable	Gas group	Not Available
Solubility in water (g/L)	Immiscible	pH as a solution (1%)	Not Applicable
Vapour density (Air = 1)	Not Applicable	VOC g/L	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	Product is considered stable and hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
Ingestion	Accidental ingestion of the material may be damaging to the health of the individual.
Skin Contact	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives 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. Irritation and skin reactions are possible with sensitive skin Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds 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.
Eye	Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
Chronic	Long-term exposure to the product is not thought to produce chronic effects adverse to health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

Permite; Lojic +; GS-80; GS-80 Spherical; F400; New Ultrafine; SDI Admix; SDI Spherical; SDI Alloy, and Ultratabs- Alloy powder and Tablets	TOXICITY	IRRITATION
	Not Available	Not Available
silver	TOXICITY	IRRITATION
	Oral (rat) LD50: >2000 mg/kg ^[1]	Not Available
tin	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg ^[1] Oral (rat) LD50: >2000 mg/kg ^[1]	Not Available
copper	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg ^[1] Inhalation (rat) LC50: 0.733 mg/14 h ^[1]	Nil Reported

Permite; Lojic +; GS-80; GS-80 Spherical; F400; New Ultrafine; SDI Admix; SDI Spherical; SDI Alloy, and Ultratabs- Alloy powder and Tablets

	Inhalation (rat) LC50: 1.03 mg/l4 h ^[1]	
	Inhalation (rat) LC50: 1.67 mg/l4 h ^[1]	
	Oral (rat) LD50: 300-500 mg/kg ^[1]	
indium	TOXICITY	IRRITATION
	Not Available	Not Available
zinc	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 1130 mg/kg ^[2]	Not Available
	Oral (rat) LD50: >2000 mg/kg ^[1]	
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. * Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances	

COPPER	<p>for copper and its compounds (typically copper chloride):</p> <p>Acute toxicity: There are no reliable acute oral toxicity results available. In an acute dermal toxicity study (OECD TG 402), one group of 5 male rats and 5 groups of 5 female rats received doses of 1000, 1500 and 2000 mg/kg bw via dermal application for 24 hours. The LD50 values of copper monochloride were 2,000 mg/kg bw or greater for male (no deaths observed) and 1,224 mg/kg bw for female. Four females died at both 1500 and 2000 mg/kg bw, and one at 1,000 mg/kg bw. Symptom of the hardness of skin, an exudation of hardness site, the formation of scar and reddish changes were observed on application sites in all treated animals. Skin inflammation and injury were also noted. In addition, a reddish or black urine was observed in females at 2,000, 1,500 and 1,000 mg/kg bw. Female rats appeared to be more sensitive than male based on mortality and clinical signs.</p> <p>No reliable skin/eye irritation studies were available. The acute dermal study with copper monochloride suggests that it has a potential to cause skin irritation.</p> <p>Repeat dose toxicity: In repeated dose toxicity study performed according to OECD TG 422, copper monochloride was given orally (gavage) to Sprague-Dawley rats for 30 days to males and for 39 - 51 days to females at concentrations of 0, 1.3, 5.0, 20, and 80 mg/kg bw/day. The NOAEL value was 5 and 1.3 mg/kg bw/day for male and female rats, respectively. No deaths were observed in male rats. One treatment-related death was observed in female rats in the high dose group. Erythropoietic toxicity (anaemia) was seen in both sexes at the 80 mg/kg bw/day. The frequency of squamous cell hyperplasia of the forestomach was increased in a dose-dependent manner in male and female rats at all treatment groups, and was statistically significant in males at doses of =20 mg/kg bw/day and in females at doses of =5 mg/kg bw/day doses. The observed effects are considered to be local, non-systemic effect on the forestomach which result from oral (gavage) administration of copper monochloride.</p> <p>Genotoxicity: An in vitro genotoxicity study with copper monochloride showed negative results in a bacterial reverse mutation test with Salmonella typhimurium strains (TA 98, TA 100, TA 1535, and TA 1537) with and without S9 mix at concentrations of up to 1,000 ug/plate. An in vitro test for chromosome aberration in Chinese hamster lung (CHL) cells showed that copper monochloride induced structural and numerical aberrations at the concentration of 50, 70 and 100 ug/mL without S9 mix. In the presence of the metabolic activation system, significant increases of structural aberrations were observed at 50 and 70 ug/mL and significant increases of numerical aberrations were observed at 70 ug/mL. In an in vivo mammalian erythrocyte micronucleus assay, all animals dosed (15 - 60 mg/kg bw) with copper monochloride exhibited similar PCE/(PCE+NCE) ratios and MNPCE frequencies compared to those of the negative control animals. Therefore copper monochloride is not an in vivo mutagen.</p> <p>Carcinogenicity: there was insufficient information to evaluate the carcinogenic activity of copper monochloride.</p> <p>Reproductive and developmental toxicity: In the combined repeated dose toxicity study with the reproduction/developmental toxicity screening test (OECD TG 422), copper monochloride was given orally (gavage) to Sprague-Dawley rats for 30 days to males and for 39-51 days to females at concentrations of 0, 1.3, 5.0, 20, and 80 mg/kg bw/day. The NOAEL of copper monochloride for fertility toxicity was 80 mg/kg bw/day for the parental animals. No treatment-related effects were observed on the reproductive organs and the fertility parameters assessed. For developmental toxicity the NOAEL was 20 mg/kg bw/day. Three of 120 pups appeared to have icterus at birth; 4 of 120 pups appeared runted at the highest dose tested (80 mg/kg bw/day).</p> <p>WARNING: Inhalation of high concentrations of copper fume may cause "metal fume fever", an acute industrial disease of short duration. Symptoms are tiredness, influenza like respiratory tract irritation with fever.</p>
ZINC	The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.
TIN & INDIUM	No significant acute toxicological data identified in literature search.

Acute Toxicity	☐	Carcinogenicity	☐
Skin Irritation/Corrosion	☐	Reproductivity	☐
Serious Eye Damage/Irritation	☐	STOT - Single Exposure	☐
Respiratory or Skin sensitisation	☐	STOT - Repeated Exposure	☐
Mutagenicity	☐	Aspiration Hazard	☐

Legend: ✗ – Data available but does not fill the criteria for classification
✓ – Data required to make classification available
☐ – Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
silver	BCF	336	Crustacea	0.02mg/L	4
silver	EC50	48	Crustacea	0.00024mg/L	4
silver	EC50	96	Algae or other aquatic plants	0.001628837mg/L	4
silver	LC50	96	Fish	0.0012mg/L	2
silver	NOEC	480	Crustacea	0.00031mg/L	2
tin	EC50	48	Crustacea	0.00018mg/L	5
tin	LC50	96	Fish	>0.0124mg/L	2
tin	NOEC	168	Crustacea	<0.005mg/L	2

Continued...

Permite; Lojic +; GS-80; GS-80 Spherical; F400; New Ultrafine; SDI Admix; SDI Spherical; SDI Alloy, and Ultratabs- Alloy powder and Tablets

tin	EC50	72	Algae or other aquatic plants	>0.0192mg/L	2
copper	BCF	960	Fish	200mg/L	4
copper	EC50	72	Algae or other aquatic plants	0.013335mg/L	4
copper	NOEC	96	Crustacea	0.0008mg/L	4
copper	EC50	48	Crustacea	0.001mg/L	5
copper	EC50	96	Crustacea	0.001mg/L	5
copper	LC50	96	Fish	0.0028mg/L	2
zinc	BCF	360	Algae or other aquatic plants	9mg/L	4
zinc	EC50	72	Algae or other aquatic plants	0.106mg/L	4
zinc	LC50	96	Fish	0.00272mg/L	4
zinc	EC50	120	Fish	0.00033mg/L	5
zinc	EC50	48	Crustacea	0.04mg/L	5
zinc	NOEC	72	Algae or other aquatic plants	0.00084981mg/L	2

Legend:

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

SECTION 13 DISPOSAL CONSIDERATIONS**Waste treatment methods**

Product / Packaging disposal	<p>Consult State Land Waste Management Authority for disposal.</p> <ul style="list-style-type: none"> ▶ DO NOT allow wash water from cleaning or process equipment to enter drains. ▶ It may be necessary to collect all wash water for treatment before disposal. ▶ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▶ Where in doubt contact the responsible authority.
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SECTION 14 TRANSPORT INFORMATION**Labels Required**

Marine Pollutant	NO
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Land transport (TDG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION**Safety, health and environmental regulations / legislation specific for the substance or mixture**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

SILVER(7440-22-4) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Continued...

Permite; Lojic +; GS-80; GS-80 Spherical; F400; New Ultrafine; SDI Admix; SDI Spherical; SDI Alloy, and Ultratabs- Alloy powder and Tablets

Canada - (English)	Canada - Quebec Permissible Exposure Values for Airborne Contaminants (French)
Canada - Alberta Occupational Exposure Limits	Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits
Canada - British Columbia Occupational Exposure Limits	Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances
Canada - Nova Scotia Occupational Exposure Limits	Canada Categorization decisions for all DSL substances
Canada - Ontario Occupational Exposure Limits	Canada Domestic Substances List (DSL)
Canada - Prince Edward Island Occupational Exposure Limits	International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

TIN(7440-31-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Canada - (English)	Canada - Quebec Permissible Exposure Values for Airborne Contaminants (French)
Canada - Alberta Occupational Exposure Limits	Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits
Canada - British Columbia Occupational Exposure Limits	Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances
Canada - Nova Scotia Occupational Exposure Limits	Canada Categorization decisions for all DSL substances
Canada - Ontario Occupational Exposure Limits	Canada Domestic Substances List (DSL)
Canada - Prince Edward Island Occupational Exposure Limits	

COPPER(7440-50-8) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Canada - (English)	Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits
Canada - Alberta Occupational Exposure Limits	Canada - Saskatchewan Occupational Health and Safety Regulations - Designated Chemical Substances
Canada - British Columbia Occupational Exposure Limits	Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances
Canada - Nova Scotia Occupational Exposure Limits	Canada Categorization decisions for all DSL substances
Canada - Ontario Occupational Exposure Limits	Canada Domestic Substances List (DSL)
Canada - Prince Edward Island Occupational Exposure Limits	International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (French)	

INDIUM(7440-74-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Canada - (English)	Canada - Quebec Permissible Exposure Values for Airborne Contaminants (French)
Canada - Alberta Occupational Exposure Limits	Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits
Canada - British Columbia Occupational Exposure Limits	Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances
Canada - Nova Scotia Occupational Exposure Limits	Canada Categorization decisions for all DSL substances
Canada - Ontario Occupational Exposure Limits	Canada Domestic Substances List (DSL)
Canada - Prince Edward Island Occupational Exposure Limits	International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

ZINC(7440-66-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Canada - (English)	Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits
Canada - Alberta Occupational Exposure Limits	Canada Categorization decisions for all DSL substances
Canada - British Columbia Occupational Exposure Limits	Canada Domestic Substances List (DSL)
Canada - Nova Scotia Occupational Exposure Limits	Canada Forensic Identification Services Chemical Carcinogenicity Evaluation - Table 1 - Chemicals Considered for Assessment (English)
Canada - Ontario Occupational Exposure Limits	Canada Forensic Identification Services Chemical Carcinogenicity Evaluation - Table 1 - Chemicals Considered for Assessment (French)
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (French)	International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (zinc; indium; copper; tin; silver)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	N (zinc; indium; copper; tin; silver)
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
Legend:	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

SECTION 16 OTHER INFORMATION

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by SDI Limited using available literature references.

The 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.

Definitions and abbreviations

PC — TWA: Permissible Concentration-Time Weighted Average
 PC — STEL: Permissible Concentration-Short Term Exposure Limit
 IARC: International Agency for Research on Cancer
 ACGIH: American Conference of Governmental Industrial Hygienists
 STEL: Short Term Exposure Limit
 TEEL: Temporary Emergency Exposure Limit.

Continued...

Permite; Lojic +; GS-80; GS-80 Spherical; F400; New Ultrafine; SDI Admix; SDI Spherical; SDI Alloy, and Ultratabs- Alloy powder and Tablets

IDLH: Immediately Dangerous to Life or Health Concentrations

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection

OTV: Odour Threshold Value

BCF: BioConcentration Factors

BEI: Biological Exposure Index

The information contained in the Safety Data Sheet is based on data considered to be accurate, however, no warranty is expressed or implied regarding the accuracy of the data or the results to be obtained from the use thereof.

Other information:

Prepared by: SDI Limited

3-15 Brunsdon Street, Bayswater Victoria, 3153, Australia

Phone Number: +61 3 8727 7111

Date of preparation/revision: 23rd September 2015

Department issuing SDS: Research and Development

Contact: Technical Director