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

Trade name	Zinc
Product code	None
Product list	ASTM B6 special high grade ; ASTM B6 high grade ; ASTM B 418 type I and II ; Zinc anodes Hi-pure, Hi-Amp.
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	Zinc (French)
Name / Chemical formula	Not applicable
Chemical family	Metal
Utilisation	Cathodic protection of buried or submerged metal structures (Steel : Underground pipelines, hulls of ships and boats, submarine pipelines, domestic heating oil tanks) from corrosion (Water, soil). Automotive parts, toys, steel galvanizing.

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 toxic lead vapours formation. Possibility of skin irritation (Particules). Ingestion will nearly always cause acute gastro-intestinal irritation.
Environmental hazards	Toxic for aquatic life.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS No	Percentage (%)	EC No	Hazard statements
Zinc	7440-66-6	70-100	231-175-3	None
Lead	7439-92-1	0-1	231-100-4	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	Metal oxides (Zinc, Lead).
Fire hazard	Solid form : No fire hazard. Avoid melting moist metal. Dust : Flammable when exposed to heat or flames. Lead : In contact with fire or heat source, it may melt, and then if in contact with water, will cause a violent reaction. Possibility of toxic lead vapours formation.
Explosion hazard	Not explosive (Mechanical impact ; Static discharge). Dust : Slightly explosive to explosive in presence of open flames and sparks.
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.
Protective equipment	High concentrations of fumes or dust : Use a self-contained breathing apparatus (SCBA) to avoid inhalation of material. Low concentrations : Use a NIOSH/OSHA approved full face cartridge respirator or the equivalent.

SECTION 7. HANDLING AND STORAGE

Handling	DO NOT ingest or inhale dust.
Conditions for storage	Away from : Incompatible substances (Acids).

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)
Zinc	7440-66-6	70-100	Not established	Not established	Not established
Lead	7439-92-1	0-1	0.05 (Pb, inorganic compds Pb)	0.05 (Pb, Pb compds)	0.05 (Pb, inorganic compds)

Note : **Lead :** NIOSH REL-TWA (≤10 hours) : 0.05 mg/m^3 ; REL also applies to other lead compounds (as Pb) ; IDLH : 100 mg/m^3 (Metal ; Compounds). OSHA PEL-TWA : PEL also applies to other lead compounds (as Pb).

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 (Flat top anode, ball, disc, ingot, plate, rod)	Odour	Not applicable
Molecular weight	Not applicable	Taste	Not applicable
pH (1% soln/water)	Not applicable	Colour	Silver grey
Boiling point	Not available	Volatility	Not available
Melting point	420°C (788°F)	% Moisture	Not available
Critical temperature	Not available	Odour threshold	Not available
Specific gravity	7.14 (Water = 1)	Water/Oil dist. coeff.	Insoluble (Water, oil)
Vapour pressure	Not available	Ionicity (in water)	Not available
Vapour density	Not available	Dispersion	Not available
Solubility	No (Water, methanol, diethyl ether, n-octanol, acetone).		

SECTION 10. STABILITY AND REACTIVITY

Stability: Yes (Under normal conditions of ambiant temperature)

Reactivity: Reactive or incompatible with : Acids.

Dangerous decomposition: Metallic oxides

Conditions to avoid: Acids

Dangerous polymerization: No

Materials to avoid: **Zinc :** Ammonium nitrate, barium dioxide, barium dinitrate, chlorates, chlorides, fluorides, chlorine trifluoride, chromic trioxide, hydrazine mononitrate, hydroxylamine, performic acid, potassium nitrate, dipotassium peroxide, selenium, sodium peroxide, tellurium, sulfur, sodium hydroxide, nitrobenzene, oxidants ; Dusts or very fine powder with water.

Lead : Violent reaction on ignition with : Chlorine trifluoride, concentrated hydrogen peroxide, ammonium nitrate, sodium acetylide. Other incompatibilities : Sodium nitrate, zirconium, disodium acetylide, oxidants.

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.

Carcinogenicity: **Lead :** POSSIBLE (Group 2B, IARC) (EPA) ; CARCINOGEN (Animal, A3, ACGIH).
Zinc : NOT A CARCINOGEN (IARC, OSHA, NTP) ; NOT LISTED (ACGIH).

Mutagenicity: **Lead :** Cytogenetic analysis ; DNA. (RTECS).

Teratogenicity: **Lead :** SUSPECTED (OSHA). Effects on embryo, foetus, fertility (RTECS).

Acute toxicity: **Zinc :** LD50 and LC50 : Not available.

Lead : ORAL acute (LoLD) : 155 mg/kg (Human) ; 0.2 mg/kg (Rat). INHALATION acute (LoTC) : 10 µg/m^3 (Human). INTRAPERITONEAL acute (LoLD) : 1 g/kg (Rat). (RTECS).

Acute effects: Solid form : No health hazards. Conditions and work practices which generate dust or fumes should be avoided or controlled.

Zinc : inhalation of vapour oxides, probably formed when heated to temperatures near or above the boiling point, may cause **metal fume fever**, a delayed, generally benign, transient, reversible flu-like condition.

Lead : Absorption is easier by inhalation and the symptoms develop more quickly than by ingestion. Symptoms : Loss of appetite, anemia, insomnia, headache, muscle and joint pain. Toxicity by ingestion, compared to those by inhalation, requires greater concentrations before symptom onset.

Chronic effects	Non-controlled repeated or prolonged exposure : Possibility of target organ damages (Blood, kidneys, liver, lungs ; nervous and reproductive systems). **Lead :** Target organs for acute and chronic overexposure (NIOSH 90-117) : Blood, gingival tissues ; gastro-intestinal, central nervous, renal systems. Symptoms of acute overexposure often develop abruptly and resemble those of chronic overexposure : Anaemia, lassitude, weakness, nausea, vomiting, abdominal cramps, constipation, confusion, convulsions, muscular weakness, muscular and joint pains. Target organs (Chronic overexposure) : Blood, kidneys, digestive, nervous and reproductive systems.
Toxicity	Persons with the following pre-existing conditions warrant particular attention : **Lead :** Anaemia, pregnant or breast feeding women and women of child bearing age. Preferred method for biological monitoring : Blood lead levels (Pb blood) measurement (BEI 30 µg/100 ml) ; Sampling time : Not critical. *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. **Zinc :** Rainbow trout (LC50, 96h) : 1.2 ppm ; (LC50, 48 h) 4.76 ppm ; Zebra fish (LC50, 48 h) : 136 ppm.
Toxicity to animals	**Lead :** ORAL acute (LoLD) : 155 mg/kg (Human) ; 0.2 mg/kg (Rat). INHALATION acute (LoTC) : 10 µg/m^3 (Human). INTRAPERITONEAL acute (LoLD) : 1 g/kg (Rat). (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	Due to the product's composition, particular attention must be taken. **Zinc :** May be toxic to aquatic life. Low levels of zinc will affect taste of water.
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.
Labelling (DSD)	EU (Regulation 67/548/EEC) : Not listed. EU: Consolidated Inventories : Listed **Zinc :** EU Consolidated Inventories : EC Number 231-175-3 **Lead :** EU Consolidated Inventories : EC Number 231-100-4 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.)	CERCLA Section 103 Hazardous substances (40 CFR 302.4) : Listed. **Zinc** (RQ) **:** *1 000 pounds (454 kg) CERCLA Section 103 Hazardous substances (40 CFR 302.4) ; SARA 110 ATSDR CERCLA Priority List : Listed ; SARA Section 313, Toxic Chemicals (40 CFR 372.65) : Listed. **Lead** (RQ) **:** *10 pounds (4.54 kg) TSCA (EPA, Toxic Substance Control Act) Chemical Inventory (40 CFR710) : Listed. **Zinc ; Lead.** * No declaration required if the diameter of the piece of solid metal released is equal to or exceeds 100 micrometers (0.004 inches).
Classifications HCS (U.S.A.)	Not controlled

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

Fire Hazard	0	Reactivity	1	Health	2	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.

Written by : Groupe STEM Consultants / Xstrata Zinc Canada

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Request Gino De Nobile Tel. : (514) 637-3591 Fax : (514) 637-1294
Xstrata Zinc Canada, General Smelting Company of Canada, 1400 Norman Street, Lachine (Québec), Canada H8S 1A8

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