

## LEAD METAL MATERIAL SAFETY DATA SHEET

### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Identity:** Lead Metal

**Manufacturer:**  
Teck Cominco Metals Ltd.  
Trail Operations  
Trail, British Columbia  
V1R 4L8  
Emergency Telephone: 250-364-4214

**Supplier:**  
Teck Cominco Metals Ltd.  
1500-120 Adelaide Street, W.  
Toronto, Ontario  
M5H 1T1

**MSDS Preparer:**  
Teck Cominco Limited  
600 - 200 Burrard Street  
Vancouver, British Columbia  
V6C 3L9

**Date of Last MSDS Revision/Edit:** September 21, 2001

**Product Use:** Uses of lead include: use as a construction material for tank linings, piping, and equipment used in the manufacture of sulfuric acid and the refining and processing of petroleum; use in x-ray and atomic radiation shielding; use in the manufacture of tetraethyl lead, paint pigments, organic and inorganic lead compounds, lead shot, lead wire for bullets, ballast, and lead solders; use as a bearing metal or alloy; use in the manufacture of storage batteries, ceramics, plastics, and electronic devices; use in the metallurgy of steel and other metals; and use in the form of lead oxide for batteries.

### SECTION 2. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient	Approximate Percent by Weight	C.A.S. Number	Occupational Exposure Limits (OELs)		LD <sub>50</sub> /LC <sub>50</sub> Species and Route
Lead	99+%	7439-92-1	OSHA PEL	0.05mg/m <sup>3</sup>	No Data
			ACGIH TLV	0.05mg/m <sup>3</sup>	
			NIOSH REL	0.10mg/m <sup>3</sup>	

NOTE: OELs for individual jurisdictions may differ from OSHA PELs. Check with local authorities for the applicable OELs in your jurisdiction. OSHA - Occupational Safety and Health Administration; ACGIH - American Conference of Governmental Industrial Hygienists; NIOSH - National Institute for Occupational Safety and Health. OEL - Occupational Exposure Limit, PEL - Permissible Exposure Limit, TLV - Threshold Limit Value, REL - Recommended Exposure Limit.

**Trade Names and Synonyms:** Lead; Pb; Plumbum; Metallic Lead; Inorganic Lead; ASTM B29; TADANAC Lead, Low-Alpha Lead

### SECTION 3. HAZARDS IDENTIFICATION

**Emergency Overview:** A bluish-white to silvery-grey heavy, soft metal that does not burn in bulk. Finely-divided lead dust clouds are a moderate fire hazard and moderate explosion hazard, however. When heated in air highly toxic lead fumes can be generated. Inhalation or ingestion of lead may produce both acute and chronic health effects. Possible cancer and reproductive hazard. SCBA and full protective clothing required for fire emergency response personnel.

**Potential Health Effects:** Inhalation or ingestion of lead dust or fumes may result in headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemias and leg, arm, and joint pain. Prolonged exposure may also cause central nervous system damage (e.g., fatigue, headaches, tremors, hypertension), gastrointestinal disturbances, anemia, kidney dysfunction and possible reproductive effects. Pregnant women should be protected from excessive exposure to prevent lead crossing the placental barrier and causing infant neurological disorders. Lead is classified as an A3 Carcinogen by the ACGIH and as a 2B Carcinogen by IARC. (see Toxicological Information, Section 11)

**Potential Environmental Effects:** This substance may be hazardous to the environment. Special attention should be given to air and water. In the food chain important to humans, bioaccumulation takes place, specifically in plants and water organisms, especially shellfish. (see Ecological Information, Section 12)

**EU Risk Phrase(s):** R61 - may cause harm to unborn child; R62 - possible risk of impaired fertility; R20/22 - harmful by inhalation and if swallowed; R33 - danger of cumulative effects.

## SECTION 4. FIRST AID MEASURES

**Eye Contact:** Flush with warm, running water, including under the eyelids, to remove dust particle(s). If irritation persists seek medical attention.

**Skin Contact:** *Dust:* Remove contaminated clothing and wash affected area with soap and warm water. Launder contaminated clothing before reuse. Seek medical attention if irritation develops or persists. *Molten Metal:* Flush contact area to solidify and cool but do not attempt to remove encrusted material or clothing. Cover burns and seek medical attention immediately.

**Inhalation:** Remove victim from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Medical oxygen may be administered, if available, where breathing is difficult. Seek immediate medical attention.

**Ingestion:** If victim is conscious and can swallow, dilute stomach contents with 2-4 cupfuls of water or milk and induce vomiting. Seek medical attention and bring a copy of this MSDS. Never give anything by mouth to an unconscious person.

## SECTION 5. FIRE FIGHTING MEASURES

**Fire and Explosion Hazards:** Massive metal is not flammable or combustible. Finely-divided lead dust or powder is a moderate fire hazard and moderate explosion hazard when dispersed in the air at high concentrations and exposed to heat, flame, or incandescents. Explosions may also occur upon contact with certain incompatible materials (see Stability and Reactivity, Section 10).

**Extinguishing Media:** Use any means of extinction appropriate for surrounding fire conditions such as water spray, carbon dioxide, dry chemical, or foam.

**Fire Fighting:** If possible, move material from fire area and cool material exposed to flame. Highly toxic lead oxide fumes may evolve in fires. Fire fighters must be fully trained and wear full protective clothing including an approved, self-contained breathing apparatus which supplies a positive air pressure within a full facepiece mask.

**Flashpoint and Method:** Not Applicable

**Upper and Lower Flammable Limit:** Not Applicable

**Autoignition Temperature:** Not Applicable

## SECTION 6. ACCIDENTAL RELEASE MEASURES

**Procedures for Cleanup:** Control source of spillage if possible to do so safely. Restrict access to the area until completion of clean-up. Clean up spilled material immediately, observing precautions in Section 8, Personal Protection. Molten metal should be allowed to solidify before cleanup. If solid metal, wear gloves, pick up and return to process. If dust, wear recommended personal protective equipment (see Section 8) and use methods which will minimize dust generation (e.g., vacuum solids). Return uncontaminated spilled material to the process if possible. Place contaminated material in suitable labeled containers for recovery or disposal. Treat or dispose of waste material in accordance with all local, regional, and national requirements.

**Personal Precautions:** Persons responding to an accidental release should wear protective clothing, gloves and a respirator (see also Section 8). Close-fitting safety goggles may be necessary in some circumstances to prevent eye contact with dust and fume. Where molten metal is involved, wear heat-resistant gloves and suitable clothing for protection from hot-metal splash as well as a respirator to protect against inhalation of lead fume. Workers should wash and change clothing following cleanup of a lead spill to prevent personal contamination with lead dust.

**Environmental Precautions:** Lead and its compounds can pose a severe threat to the environment. Contamination of water, soil, and air should be prevented.

## SECTION 7. HANDLING AND STORAGE

Store in a dry, covered area away from incompatible materials, strong acids and food or feedstuffs. Solid metal suspected of containing moisture should be THOROUGHLY DRIED before being added to a molten bath. Otherwise, entrained moisture could expand explosively and spatter molten metal out of the bath. Always practice good personal hygiene. Refrain from eating, drinking, or smoking in work areas. Thoroughly wash hands before eating, drinking, or smoking in appropriate, designated areas as well as at the end of the workday. No special packaging materials are required.

**EU Safety Phrase(s):** S53 - Avoid exposure - obtain special instructions before use; S45 – In case of accident, or if you feel unwell, seek medical advise immediately (show label where possible).

## SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Protective Clothing:** Gloves and coveralls or other work clothing are recommended to prevent prolonged or repeated direct skin contact when lead is processed. Appropriate eye protection should be worn where fume or dust is generated. Where hot or molten metal is handled, heat resistant gloves, goggles or face shield, and clothing to protect from hot metal splash should be worn. Safety type boots are recommended.

Do not eat, drink or smoke in work areas. Thoroughly wash hands before eating, drinking, or smoking in appropriate, designated areas as well as at the end of the workday. A double locker-shower system with separate clean and dirty sides is usually required for lead handling operations. Remove contaminated clothing promptly and discard or launder before reuse. Inform laundry personnel of contaminants' hazards.

**Ventilation:** Use adequate local or general ventilation to maintain the concentration of lead fumes in the working environment well below recommended occupational exposure limits. Supply sufficient replacement air to make up for air removed by the exhaust system. Local exhaust is recommended for melting, casting, grinding, burning, and use of powders.

**Respirators:** Where lead dust or fumes are generated and cannot be controlled to within acceptable levels by engineering means, use appropriate NIOSH-approved respiratory protection equipment (a 42CFR84 Class N, R or P-100 particulate filter cartridge). When exposure levels are unknown, a self-contained breathing apparatus which supplies a positive air pressure within a full facepiece mask should be worn.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b> Malleable, bluish-white or silvery-grey metal	<b>Odour:</b> None	<b>Physical State:</b> Solid	<b>pH:</b> Not Applicable
<b>Vapour Pressure:</b> 1.3 mm Hg at 970°C (negligible)	<b>Vapour Density:</b> Not Applicable	<b>Boiling Point/Range:</b> 1,740°C	<b>Freezing/Melting Point/Range:</b> 328°C
<b>Specific Gravity:</b> 11.34	<b>Evaporation Rate:</b> Not Applicable	<b>Coefficient of Water/Oil Distribution:</b> Not Applicable	<b>Odour Threshold:</b> None
<b>Solubility:</b> Insoluble in water			

## SECTION 10. STABILITY AND REACTIVITY

**Stability & Reactivity:** Massive metal is stable under normal temperatures and pressures. Fresh cut or cast lead surfaces tarnish rapidly due to the formation of an insoluble protective layer of basic lead carbonate.

**Incompatibilities:** Lead reacts vigorously with strong oxidizers, such as hydrogen peroxide and chlorine trifluoride, and active metals, such as sodium and potassium. Powdered lead metal in contact with disodium acetylide, chlorine trifluoride, sodium carbide or fused ammonium nitrate poses a risk of explosion. Solutions of sodium azide in contact with lead metal can form lead azide, which is a detonating compound. A lead-zirconium alloy (10-70% Zr) will ignite when struck with a hammer.

**Hazardous Decomposition Products:** High temperature operations such as oxy-acetylene cutting, electric arc welding or overheating a molten bath will generate highly toxic lead oxide fume. Lead oxide is highly soluble in body fluids and the particle size of the metal fumes is largely within the respirable size range, which increases the likelihood of inhalation and deposition of the fume within the body.

## SECTION 11. TOXICOLOGICAL INFORMATION

**General:** Lead accumulates in bone and body organs once it enters the body. Elimination from the body is slow. Initial and periodic medical examinations are advised for persons repeatedly exposed to levels above the exposure limits of lead dust or fumes. Once lead enters the body, it can affect a variety of organ systems, including the nervous system, kidneys, reproductive system, blood formation, and gastrointestinal system. The primary routes of exposure to lead are inhalation or ingestion of dust and fumes.

**Acute:**



WHMIS CLASSIFICATION..... D2A, Materials Causing Other Toxic Effects – Very Toxic

**EUROPEAN UNION:**

Ingredients Listed on the European Inventory of Existing Commercial Chemical Substances (EINECS)..... Yes  
EU Classification..... Category 1 and 3 Reproductive Toxin

**SECTION 16. OTHER INFORMATION**

The information in this Material Safety Data Sheet is based on the following references:

- American Conference of Governmental Industrial Hygienists, 1991, Documentation of the Threshold Limit Values and Biological Exposure Indices, Sixth Edition plus updates.
- American Conference of Governmental Industrial Hygienists, 2000, Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.
- Canadian Centre for Occupational Health and Safety (CCOHS), Hamilton, Ontario, CHEMINFO Record No. 608 - Lead (Rev. 1998-11).
- Clayton and Clayton, 1994, Patty's Industrial Hygiene and Toxicology, Fourth Edition.
- European Economic Community, Commission Directives 91/155/EEC and 67/548/EEC.
- Industry Canada, SOR/88-66, as amended, Controlled Products Regulations.
- International Chemical Safety Cards (WHO/IPCS/ILO), ICSC:0052 - Lead.
- Lewis, Richard J., Sr., 1991, Hazardous Chemicals Desk Reference, Second Edition.
- Merck & Co., Inc., 1989, The Merck Index, An Encyclopedia of Chemicals, Drugs, and Biologicals, Eleventh Edition.
- National Library of Medicine, National Toxicology Information Program, 1996, Hazardous Substance Data Bank.
- NIOSH Pocket Guide to Chemical Hazards, CD-ROM Edition DHHS (NIOSH) Publication No 99-115, April 1999.
- Online Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, 1996, Integrated Risk Information System.
- Sax, N. Irving, 1989, Dangerous Properties of Industrial Materials, Seventh Edition.
- U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health, 1990, NIOSH Pocket Guide to Chemical Hazards.
- U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, 1993, Toxicological Profile for Lead.

**Notice to Reader**

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