



Safety Data Sheet

1. IDENTIFICATION

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| Product Name: Lead Acid Battery Synonyms: SLI Battery | Product Use: Vehicle Electrical System Manufacturer/Supplier: Canadian Energy Address: 107-10550 42 St SE Calgary, AB, T2C 5C7 |
| General Information Number: 1-800-236-7472 Contact Person: Canadian Energy H&S Department | Emergency number: CANUTEC 613-996-6666 |

2. HAZARD(S) IDENTIFICATION

| Health | | Environmental | Physical |
|--|-------------|--------------------------------------|----------------------------------|
| Acute Toxicity (Oral, dermal, inhalation) | Category 4 | Aquatic Chronic 1 Aquatic Acute 1 | Explosive Chemical, Division 1.3 |
| Skin corrosion/irritation | Category 1A | | |
| Eye Damage | Category 1 | | |
| Reproductive | Category 1A | | |
| Carcinogenicity (lead) | Category 1B | | |
| Carcinogenicity (acid mist) | Category 1A | | |
| Specific target organ toxicity (repeated exposure) | Category 2 | | |

Label Elements:

| Health | Environmental | Physical |
|---|---|----------|
| | | |
| Hazard Statements DANGER! Causes severe skin burns and eye damage. Causes serious eye damage. May damage fertility or the unborn child if ingested or inhaled. May cause cancer if ingested or inhaled. Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure. | Precautionary Statements Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing, eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Causes skin irritation, serious eye damage. Contact with internal components may cause irritation or severe burns. Avoid contact with internal acid. Irritating to eyes, respiratory system, and skin. | |

May form explosive air/gas mixture during charging.
Extremely flammable gas (hydrogen).
Explosive, fire, blast or projection hazard.

3. COMPOSITION / INFORMATION ON INGREDIENTS

| INGREDIENTS (Chemical/Common Names): | CAS No.: | % by Wt: |
|--------------------------------------|-----------|----------|
| Lead | 7439-92-1 | 34 |
| Lead Oxide | 1309-60-0 | 31 |
| Sulfuric Acid | 7664-93-9 | 34 |
| Lead Sulfate | 7446-14-2 | <1 |

Composition Comments

All concentrations are in percent by weight.

4. FIRST AID MEASURES

Note: Under normal conditions of battery use, internal components will not present a health hazard. The following information is provided for battery electrolyte (acid) and lead for exposures that may occur during battery production or container breakage or under extreme heat conditions such as fire.

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| Inhalation | Sulfuric Acid: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician. Lead: Remove from exposure, gargle, wash nose and lips; consult physician. |
| Skin contact | Sulfuric Acid: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes. If symptoms persist, seek medical attention. Wash contaminated clothing before reuse. Discard contaminated shoes. Lead: Wash immediately with soap and water. |
| Eye contact | Sulfuric Acid and Lead: Flush immediately with large amounts of water for at least 15 minutes while lifting lids; Seek immediate medical attention if eyes have been exposed directly to acid. |
| Ingestion | Sulfuric Acid: Give large quantities of water; Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death; consult physician. Lead: Consult physician immediately. |

5. FIRE FIGHTING MEASURES

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| Flash Point | Not applicable unless individual components exposed. |
| Auto ignition | No data available. |
| Temperature | |
| Flammable Limits | LEL = 4.1% (Hydrogen Gas in air) ; UEL = 74.2% |
| Extinguishing | CO ₂ ; foam; dry chemical. Do not use carbon dioxide directly on cells. Avoid breathing vapors. Use appropriate media for surrounding fire. |
| Media | |
| Special Fire Fighting Procedures | Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on charge, shut off power to the charging equipment, but note that strings of series connected batteries may still pose risk of electric shock even when charging equipment is shut down. |
| Unusual Fire and Explosion Hazard | Highly flammable hydrogen gas is generated during charging and operation of batteries. If ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery. Follow manufacturer's instructions for installation and service. |

6: ACCIDENTAL RELEASE MEASURES

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| Protective Measures to be Taken if Material is Released or Spilled | Stop flow of material, contain/absorb small spills with dry sand, earth, and vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of un-neutralized acid to sewer. Acid must be managed in accordance with approved local, provincial, and federal requirements. |
| Waste Disposal Method | Dispose of as a hazardous waste. Dispose of in accordance with applicable local, provincial and federal regulations. |

7. HANDLING AND STORAGE

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| Handling | Unless involved in recycling operations, do not breach the casing or empty the contents of the battery. Handle carefully and avoid tipping, which may allow electrolyte leakage. There may be increasing risk of electric shock from strings of connected batteries. Keep containers tightly closed when not in use. If battery case is broken, avoid contact with internal components. Keep vent caps on and cover terminals to prevent short circuits. Place cardboard between layers of stacked automotive batteries to avoid damage and short circuits. Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water. Use banding or stretch wrap to secure items for shipping. |
| Storage | Store batteries under roof in cool, dry, well-ventilated areas separated from incompatible materials and from activities that may create flames, spark, or heat. Store on smooth, impervious surfaces provided with measures for liquid containment in the event of electrolyte spills. Keep away from metallic objects that could bridge the terminals on a battery and create a dangerous short-circuit. Room ventilation is required for batteries utilized for standby power generation. Never recharge batteries in an unventilated, enclosed space. |
| Charging: | There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether or not being charged. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged. |
| Other | Follow Manufacturers Recommendations regarding maximum recommended currents and operating temperature range. Do not overcharge beyond the recommended upper charging voltage limit. Applying pressure or deforming the battery may lead to disassembly followed by eye, skin and throat irritation. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Occupational exposure limits | Type | Value | Form |
|---|------|------------------------|--------------------|
| Antimony (CAS 7440-36-0) | TWA | 0.5 mg/m ³ | |
| Electrolyte (Sulfuric acid) (CAS 7664-93-9) | TWA | 0.2 mg/m ³ | Thoracic fraction. |
| Lead and lead compounds (inorganic) (CAS 7439-92-1) | TWA | 0.05 mg/m ³ | |

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

| Components | Type | Value |
|---|------|------------------------|
| Antimony (CAS 7440-36-0) | TWA | 0.5 mg/m ³ |
| Electrolyte (Sulfuric acid) (CAS 7664-93-9) | STEL | 3 mg/m ³ |
| | TWA | 1 mg/m ³ |
| Lead and lead compounds (inorganic) (CAS 7439-92-1) | TWA | 0.05 mg/m ³ |

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

| Components | Type | Value | Form |
|---|------|------------|-------|
| Antimony (CAS 7440-36-0) | TWA | 0.5 mg/m3 | |
| Electrolyte (Sulfuric acid) (CAS 7664-93-9) | TWA | 0.2 mg/m3 | Mist. |
| Lead and lead compounds (inorganic) (CAS 7439-92-1) | TWA | 0.05 mg/m3 | |

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

| Components | Type | Value | Form |
|---|------|------------|--------------------|
| Antimony (CAS 7440-36-0) | TWA | 0.5 mg/m3 | |
| Electrolyte (Sulfuric acid) (CAS 7664-93-9) | TWA | 0.2 mg/m3 | Thoracic fraction. |
| Lead and lead compounds (inorganic) (CAS 7439-92-1) | TWA | 0.05 mg/m3 | |

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

| Components | Type | Value | Form |
|---|------|------------|--------------------|
| Antimony (CAS 7440-36-0) | TWA | 0.5 mg/m3 | |
| Electrolyte (Sulfuric acid) (CAS 7664-93-9) | TWA | 0.2 mg/m3 | Thoracic fraction. |
| Lead and lead compounds (inorganic) (CAS 7439-92-1) | TWA | 0.05 mg/m3 | |

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

| Components | Type | Value |
|--|------|------------|
| Antimony (CAS 7440-36-0) | TWA | 0.5 mg/m3 |
| Electrolyte (Sulfuric acid)(CAS 7664-93-9) | STEL | 3 mg/m3 |
| Lead and lead compounds (inorganic) (CAS7439-92-1) | TWA | 1 mg/m3 |
| | TWA | 0.05 mg/m3 |

Biological limit values

ACGIH Biological Exposure Indices

| Components | Value | Determinant | Specimen | Sampling Time |
|---|----------|-------------|----------|---------------|
| Lead and lead compounds (inorganic) (CAS 7439-92-1) | 300 µg/l | Lead | Blood | * |

* - For sampling details, please see the source document

Appropriate engineering controls Provide adequate ventilation. Provide easy access to water supply and eye wash facilities.

Individual protection measures, such as personal protective equipment

Eye/face protection None under normal conditions. Leak from a damaged or opened battery: Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection None under normal conditions. Leak from a damaged or opened battery: Wear appropriate chemical resistant gloves.

Other None under normal conditions. Leak from a damaged or opened battery: Wear suitable protective clothing. Use of an impervious apron is recommended.

Respiratory protection None under normal conditions.

Thermal hazards When material is heated, wear gloves to protect against thermal burns.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

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| Appearance and Odor | Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor. |
| Odor Threshold | Not applicable. |
| pH | Not applicable |
| Boiling Point | Not applicable unless individual components exposed. |
| | Battery Electrolyte (Acid) - 230 - 233.6 °F (110 - 112 °C) Lead - 3191 °F (1755 °C) |
| Melting Point | Lead - 621.32 °F (327.4 °C) |
| Specific Gravity (H₂O = 1) | 1.215 to 1.350 |
| Flash Point | 498.2 °F (259.0 °C) Hydrogen |
| Evaporation Rate (Butyl Acetate = 1) | < 1 |
| Vapor Pressure (mm Hg @ 20 ° C) | Battery Electrolyte (Acid) 11.7 |
| Flammability | Hydrogen Flammability Limit Lower- 4.1 % |
| Upper/lower flammability or explosive limits | Flammability Limit Upper – 74.2 % |
| Vapor Pressure | Not applicable. |
| Vapor Density | 3.4 (Air = 1) Battery Electrolyte (Acid) |
| Relative Density | 1.21 - 1.3 Battery Electrolyte (Acid) |
| Solubility | Lead and Lead dioxide are not soluble. 100 % Battery Electrolyte (Acid). |
| % Volatile by Weight | Not applicable unless individual components exposed. |
| Partition coefficient (n-octanol/water) | Not applicable |
| Auto-ignition temperature | 1076 °F (580 °C) Hydrogen. |
| Decomposition temperature | Not applicable |
| Viscosity | Not applicable |

10. STABILITY AND REACTIVITY

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| Stability | The sealed battery is considered stable. |
| Conditions to Avoid | Sparks and other sources of ignition; high temperature; over charging. |
| Incompatibility (materials to avoid) | Electrolyte: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers, and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas. Lead compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents. Arsenic compounds: strong oxidizers; bromine azide. NOTE: hydrogen gas can react with inorganic arsenic to form the highly toxic gas – arsine |
| Hazardous Decomposition Products | Electrolyte: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide. |
| Hazardous Polymerization | Lead compounds: Temperatures above the melting point are likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas. Will not occur. |

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

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| Inhalation | Exposure to contents of an open or damaged battery: Dust/mist may irritate respiratory system. Difficulty in breathing. Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases. |
| Skin contact | Exposure to contents of an open or damaged battery: Dust/mist may irritate skin. |
| Eye contact | Exposure to contents of an open or damaged battery: Dust/mist may irritate the eyes. |
| Ingestion | Exposure to contents of an open or damaged battery: May cause discomfort if swallowed. |
| Symptoms related to the physical, chemical and toxicological characteristics | Exposure to contents of an open or damaged battery: Dust may irritate the eyes and the respiratory system. |

Information on toxicological effects

Acute toxicity

| Components | Species | Test Results |
|--|--|--|
| Electrolyte (Sulfuric acid) (CAS 7664-93-9) | | |
| Acute | | |
| <i>Oral</i> | | |
| LD50 | Rat | 2140 mg/kg |
| Skin corrosion/irritation | Exposure to contents of an open or damaged battery: Causes skin burns. | |
| Serious eye damage/eye irritation | Exposure to contents of an open or damaged battery: Causes serious eye damage. | |
| Respiratory or skin sensitization | | |
| Canada - Alberta OELs: Irritant | | |
| Antimony (CAS 7440-36-0) | | Irritant |
| Respiratory sensitization | No data available. | |
| Skin sensitization | No data available. | |
| Germ cell mutagenicity | No data available. | |
| Carcinogenicity | The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a known human carcinogen, (IARC category 1). This classification applies only to mists containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions. | |
| ACGIH Carcinogens | | |
| Electrolyte (Sulfuric acid) (CAS 7664-93-9) | | A2 Suspected human carcinogen. |
| Lead and lead compounds (inorganic) (CAS 7439-92-1) | | A3 Confirmed animal carcinogen with unknown relevance to humans. |
| Canada - Alberta OELs: Carcinogen category | | |
| Electrolyte (Sulfuric acid) (CAS 7664-93-9) | | Suspected human carcinogen. |
| Canada - Manitoba OELs: carcinogenicity | | |
| LEAD AND INORGANIC COMPOUNDS, AS PB (CAS 7439-92-1) | | Confirmed animal carcinogen with unknown relevance to humans. |
| SULFURIC ACID, WHEN CONTAINED IN STRONG INORGANIC ACID MISTS (CAS 7664-93-9) | | Suspected human carcinogen. |
| Canada - Quebec OELs: Carcinogen category | | |
| Lead and lead compounds (inorganic) (CAS 7439-92-1) | | Detected carcinogenic effect in animals. |
| IARC Monographs. Overall Evaluation of Carcinogenicity | | |
| Electrolyte (Sulfuric acid) (CAS 7664-93-9) | | 1 Carcinogenic to humans. |
| Lead and lead compounds (inorganic) (CAS 7439-92-1) | | 2B Possibly carcinogenic to humans. |

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| Reproductive toxicity | None under normal conditions. Exposure to contents of an open or damaged battery: May damage fertility or the unborn child. |
| Specific target organ toxicity - single exposure | None under normal conditions. Exposure to contents of an open or damaged battery: Causes damage to organs (Respiratory system). |
| Specific target organ toxicity - repeated exposure | None under normal conditions. Exposure to contents of an open or damaged battery: May cause damage to organs through prolonged or repeated exposure. |
| Aspiration hazard | Due to the physical form of the product it is not an aspiration hazard. |
| Chronic effects | Exposure to contents of an open or damaged battery: Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues. Chronic inhalation of sulfuric acid mist may increase the risk of lung cancer. |

12. ECOLOGICAL INFORMATION

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| Environmental Fate | Lead is very persistent in soil and sediments. No data on environmental degradation. Mobility of metallic lead between ecological compartments is slow. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants but little bioaccumulation occurs through the food chain. Most studies include lead compounds and not elemental lead |
| Environmental toxicity | Aquatic Toxicity: |
| Sulfuric Acid | 24-hr LC50, freshwater fish (Brachydanio rerio): 82 mg/L 96 hr- LOEC, freshwater fish (Cyprinus carpio): 22 mg/L |
| Lead | 48 hr LC50 (modeled for aquatic invertebrates): <1 mg/L, based on lead bullion |
| Additional Information | No known effects on stratospheric ozone depletion Volatile organic compounds: 0% (by Volume) Water Endangering Class (WGK): NA |

13. DISPOSAL CONSIDERATIONS

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| Disposal instructions | Recycle the batteries, as the primary disposal method. Avoid discharge into water courses or onto the ground. Dispose of this material and its container to hazardous or special waste collection point. |
| Local disposal regulations | Empty containers should be taken to an approved waste handling site for recycling or disposal. |
| Hazardous waste code | Not regulated. |
| Waste from residues / unused products | Avoid discharge into water courses or onto the ground. |
| Contaminated packaging | Since emptied containers retain product residue, follow label warnings even after container is emptied. |

14. TRANSPORT INFORMATION

TDG

UN number UN2794
UN proper shipping name BATTERIES, WET, FILLED WITH ACID, electric storage
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group III
Environmental hazards Not available.
Special precautions for user Not available.

IATA

UN number UN2794
UN proper shipping name Batteries, wet, filled with acid electric storage
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group -
Environmental hazards Yes
ERG Code 8L
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN2794
UN proper shipping name BATTERIES, WET, FILLED WITH ACID electric storage
Transport hazard class(es)
Class 8
Subsidiary risk -
Packing group -
Environmental hazards
Marine pollutant Yes
EmS F-A, S-B
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. REGULATORY INFORMATION

Canadian regulations

This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Electrolyte (Sulfuric acid) (CAS 7664-93-9)

Class B

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | No |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | No |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. OTHER INFORMATION

Issue Date: 05/01/2017

Further information: NFPA Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3=Serious 4 = Severe

Disclaimer

The information in this SDS was obtained from sources which we believe are reliable, but no warranty or representation as to its accuracy or completeness is hereby given. Users should consider the information herein only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal, the safety and health of employees and customers and the protection of the environment.