Safety Data Sheet

According to OSHA HCS (29 CFR 1910.1200) and WHMIS 2015 Regulations

August 18, 2023

1 Identification

- **Product Identifier**
- **Trade Name: Lithium Ion Battery**
- **Other means of identification:** No other identifiers
- **Recommended use and restriction on use**
- **Recommended use:** Lithium-based battery product.
- **Restrictions on use:** No relevant information available.
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/ Supplier:**
  Sterno, LLC
  6900 N Dallas Pkwy, #870
  Plano, TX 75024
  Phone: (951) 682-9600
- **Emergency telephone number:**
  ChemTel Inc.
  (800) 255-3924 (North America)
  (801) 1 (813) 248-0585 (International)

2 Hazard(s) identification

- **Classification of the substance or mixture**
- Not a dangerous substance according to GHS
- **Additional information:**
  Note: Leaking cells pose health hazards: see Sections 4 and 11. Intentional abuse of cells or batteries increases the risk of harm or damage to the product, to the user, and to surrounding materials and personnel. Do not attempt to open sealed cells or batteries. Do not intentionally short-circuit cells or batteries. Do not expose these products to temperatures exceeding the maximum manufacturers rating. Do not dispose of cells/batteries in landfills. Please follow all manufacturer guidelines in the use, storage, and disposal of these products. Consult manufacturer in cases of questions involving specific product usage.
  Exposure to product contents highly unlikely during normal usage.

Label elements

- **GHS label elements:**
  Not applicable
- **Hazard pictograms:**
  Not applicable
- **Signal word:**
  Not applicable
- **Hazard statements:**
  Not applicable
- **Precautionary statement:**
  Not applicable

Other hazards: There are no other hazards not otherwise classified that have been identified.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Components:**

12190-79-3	Lithium Cobaltate	15-40%
7782-42-5	Graphite	10-30%
21324-40-3	Phosphate (1-), hexafluoro-, lithium	10-30%
7440-50-8	Copper	7-13%
7429-90-5	Aluminum	5-10%
7440-02-0	Nickel	1-5%

- **Additional information:**
  For the listed ingredient(s), the identity and/or exact percentages(s) are being withheld as a trade secret.

  Exposure to product contents highly unlikely during normal usage.

4 First-aid measures

- ### Description of first-aid measures
- **General information:**
  Information references exposures to battery contents, and not exposures to whole units. Exposures to whole units are unlikely to produce health hazards.
- **After inhalation:**
  Unlikely route of exposure.
  Supply fresh air; consult doctor in case of complaints.
- **After skin contact:**
  Immediately remove any clothing soiled by the product.
  Immediately rinse with water.
  If skin irritation continues, consult a doctor.
  Seek immediate help for blistering or open wounds.
- **After eye contact:**
  Immediately remove contact lenses if possible.
  Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:**
  Do not induce vomiting; immediately call for medical help.
- **Most important symptoms and effects, both acute and delayed:**
  Strong caustic effect on skin and mucous membranes.
  Gastric or intestinal disorders when ingested.
- **Danger:**
  Danger of gastric perforation.
  Harmful if swallowed.
- **Indication of any immediate medical attention and special treatment needed:**
  Treat symptomatically.

5 Fire-fighting measures

- ### Extinguishing media
- **Suitable extinguishing agents:**
  Fire-extinguishing powder
  Sand
  Water in flooding quantities.
- **For safety reasons unsuitable extinguishing agents:** None.

- **Special hazards arising from the substance or mixture:**
  During heating or in case of fire poisonous gases are produced.
- **Advise for firefighters**
- **Protective equipment:**
  Wear self-contained respiratory protective device.
  Wear fully protective suit.
- **Additional information:** Cool endangered receptacles with water in flooding quantities.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  If containers are leaking, use respiratory protective device against the effects of fumes/dust/aerosol.
  Use personal protective equipment as required.
  Ensure adequate ventilation.
- **Environmental precautions:** Avoid release to the environment.
- **Methods and material for contamination and cleaning up:**
  Use inert material (clay, sawdust, kaolin) to absorb material and sweep up. Prevent spilled material from entering sewers, drains, bodies of water.
  Pick up mechanically.
  Send for recovery or disposal in suitable receptacles.
- **Reference to other sections:**
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **Precautions for safe handling:**
  Information is only applicable to product components, and not to product as normally supplied. This information is applicable to damaged, leaking, or spilled product as contact with contents is possible under these conditions.
  Keep away from open flames or temperatures exceeding manufacturer ratings. DO NOT ATTEMPT TO OPEN SEALED CELLS OR BATTERIES – BATTERY CONTENTS MAY PRESENT

SERIOUS SAFETY AND HEALTH HAZARDS. SHORT CIRCUITING THE TERMINALS OF A DEVICE MAY RESULT IN DAMAGE TO DEVICE AND ANY NEARBY OBJECTS OR PERSONNEL.

- **Information about protection against explosions and fires:**
  Prevent impact and friction.
  Substance/product is ignitable under certain conditions.
- **Conditions for safe storage, including any incompatibilities**
- **Requirements to be met by storerooms and receptacles:**
  Store in a dry, well-ventilated place.
  Do not use or store near open flame.
  Avoid extreme temperatures; battery may rupture and release contents.
  Do not store and transport with incompatible materials.
  Store individual batteries or cells only in approved packaging in order to avoid inadvertent short circuits, as this may result in damage to device, nearby objects, personnel, or all of the above.
- **Information about storage in one common storage facility:**
  Store away from foodstuffs.
  Store away from water.
  Do not store together with acids.
- **Further information about storage conditions:**
  Store in dry conditions.
  Protect from humidity and water.
- **Specific end use(s):** No relevant information available.

8 Exposure controls/personal protection

- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
  7440-02-0 Nickel
  TLV: TWA: 1.5 mg/m³
  PEL: TWA: 1.0 mg/m³
  OEL: TWA: 1.0 mg/m³
  IDLH: TWA: 0.015 mg/m³

- **Exposure Controls**
- **General protective and hygienic measures:**
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.
Avoid contact with eyes.
Do not inhale gases / fumes / aerosols.

- **Engineering controls:** No relevant information available.
- **Breathing equipment:**
  Not required under normal conditions of use.
  Wear protective gloves to handle contents of damaged or leaking units.
  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
- **Eye protection:** Follow relevant national guidelines concerning the use of protective eyewear.
- **Body protection:**
  Protective work clothing.
  Protection may be required for spills.
- **Limitation and supervision of exposure into the environment**
  No relevant information available.
- **Risk management measures** See Section 7 for additional information.

9 Exposure controls/personal protection

- **Information on basic physical and chemical properties**
- **Appearance:**
  Form: Solid
  Color: Silver
- **Odor:** Odorless
- **Odor threshold:** Not determined.
- **pH value:** Not determined.
- **Melting point/ Melting range:** Not determined.
- **Boiling point/ Boiling Range:** Not determined.
- **Flash point:** Not applicable.
- **Flammability:** Not applicable
- **Auto-ignition temp.:** Not applicable
- **Decomposition temp.**: Not determined.
- **Danger of explosion:** Product does not represent an explosion hazard during normal

use. Leaking contents may react with water to produce explosive or flammable gas.

- **Exposure limits**
  - **Lower:** Not determined.
  - **Upper:** Not determined.
- **Oxidizing properties:** Not determined.
- **Vapor pressure:** Not determined.
- **Density:** Not determined.

- **Relative density:** Not determined.
- **Vapor density:** Not determined.
- **Evaporation rate:** Not determined.
- **Solubility in/ Miscibility with water:** Not miscible or difficult to mix.
- **Partition coefficient:** Not determined.
- **Viscosity**
  - **Dynamic:** Not determined.
  - **Kinematic:** Not determined.
- **Other information** No relevant information available.

10 Exposure controls/personal protection

- **Reactivity:** No relevant information available.
- **Chemical stability:**
- **Thermal decomposition / conditions to be avoided:**
  No decomposition if used and stored according to specifications.
- **Possibility of hazardous reactions**
  Hazardous reactions generally occur with contents of leaking batteries only.
  Strong exothermic reaction with acids.
  Toxic fumes may be released if heated above the decomposition point.
  Contact with water releases flammable gases.
- **Conditions to avoid:** Excessive heat.
- **Incompatible materials:** No relevant information available.
- **Hazardous decomposition products**
  Carbon monoxide and carbon dioxide
  Contact with decomposition products does not normally occur, information is applicable only to damaged devices.
  Flammable gases / vapors
  Toxic metal oxide smoke
  Chlorine

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicology:**
- **LD/LC50 values that are relevant for classification:**
- **Component Information**

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Nickel Powder	9000 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure.

Irritation: No information available.

Sensitization: May cause sensitization by skin contact. Nickel and Nickel compounds may cause a form of dermatitis known as nickel itch. May cause an allergic skin reaction.

- **Carcinogenicity:** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Nickel Powder	7440-02-0	Group 2B	Reasonably Anticipated	Not listed	X	Not listed

IRAC: (International Agency for Research on Cancer)
Group 2B – Possibly Carcinogenic to Humans

- **Mutagenic Effects:** No information available.
- **Reproductive Effects:** No information available.
- **Developmental Effects:** No information available.
- **Teratogenicity:** No information available.
- **STOT – single exposure:** None known.
- **STOT – repeated exposure:** Kidney, Blood
- **Aspiration Hazard:** No information available.
- **Symptoms / effects, both acute and delayed:** Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.

- **Other adverse effects:** See actual entry in RTEC (Registry of Toxic Effects of Chemical Substances) for complete information.

12 Ecological information

- **Ecotoxicity:**
  Do not flush into surface water or sanitary sewer system. Do not allow materials to contaminate ground water system. Do not empty into drains. Harmful to aquatic organisms, may cause long-term effects in the aquatic environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Nickel Powder	0.18 mg/L EC50 = 72 h 0.174-0.311 mg/L EC50 96 h	10.4 mg/L LC50 96 h 1.3 mg/L LC50 96 h 100 mg/L LC50 96 h	Not listed	1 mg/L EC50 = 48 h 100 mg/L EC50 > 48 h

- **Persistence and degradability:** No information available.
- **Bioaccumulation/ accumulation:** No information available.
- **Mobility:** No information available.
- **Additional ecological**
  General notes: Avoid release to the environment.

  Other adverse effects: No relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
  Must not be disposed of together with household garbage. Do not allow product to reach sewer system.
  Contact waste processors for recycling information.
  The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.
- **Uncleaned packaging**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- **UN-Number:**
- **DOT, ADR/RID/AND, IMDG, IATA:** UN3481

- **UN proper shipping name:**
- **DOT, IATA, ADR/RID/ADN, IMDG:** Lithium ion batteries packed with equipment (including lithium ion polymer batteries)

- **Transport hazard class(es):**
- **DOT, IMDG, IATA:**

- **Class:** 9
- **Label:** 9

- **ADR, RID, ADN:**

- **Class:** 9 (M4)
- **Label:** 9

- **Packing group:** This UN-Number is not assigned a packing group.

- **Environmental hazards**
- **Marine pollutant:** No
- **Special precautions for user:** Warning: miscellaneous dangerous substances and Articles.
- **Transport/Additional information:**

ADR – Special Provision 188
IATA – Packing Instruction 965, Section IB
Packing Instruction 966-967, Section II

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **United States (USA)**
- **SARA 313:**

Component	CAS-No	Weight-%	SARA 313 – Threshold Values %
Nickel powder	7440-02-0	>95%	0.1

- **SARA 311/312 Hazard Categorization:**

Acute health hazard: Yes
Chronic health hazard: No
Fire hazard: No
Sudden release of pressure hazard: No
Reactive hazard: No

- **Clean Water Act:**

Component	CWA – Hazardous Substances	CWA – Reportable Quantities	CWA – Toxic Pollutants	CWA – Priority Pollutants
Nickel powder	-	-	X	X

- **Clean Air Act:**

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Nickel powder	X		-

- **TSCA:** Not applicable
- **Proposition 65 (California)**

Exposure to contents is unlikely. Listings are present to ensure compliance with the Proposition 65 notification requirement.

Component	CAS-No	California Prop 65	Category
Nickel powder	7440-02-0	Carcinogen	Carcinogen

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Abbreviations and acronyms:**
  ADR: European Agreement concerning the International Carriage of Dangerous goods by Road
  IMDG: International Maritime Code for Dangerous Goods
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  CAS: Chemical Abstracts Service (division of American Chemical Society)
  LC50: Lethal concentration, 50%
  LD50: Lethal dose, 50 %
  OSHA: Occupational Safety and Health Administration

- **Sources:**
  Website, European Chemicals Agency (echa.europa.eu)
  Website, US EPA Substance Registry Services (ofmpub.epa.gov/sor internet/registry/substreg/home/overview/home.do)
  Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)
  Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: 978-0-470-07488-6
  Safety Data Sheets, Individual Manufacturers
  Other sources considered authoritative as subject matter research, expertise or regulatory guidance.