# SAFETY DATA SHEET

**Issuing Date** 21-Sep-2016 **Revision Date** 21-Sep-2016 **Revision Number** 3

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

**Product identifier**

**Product Name** **Li Ion Battery**

**Other means of identification**

**Synonyms** None

**Recommended use of the chemical and restrictions on use**

**Recommended Use** LITHIUM ION BATTERIES

**Uses advised against** No information available

**Details of the supplier of the safety data sheet**

**Supplier Name** Stanley Black & Decker

**Supplier Address** 2501 SW Aviation Drive
Bentonville
AR
72712
US

**Supplier Phone Number** Phone:479-271-8812
Fax:479-271-9798

**Supplier Email** mellody.fletcher@bdk.com

**Emergency telephone number**

**Company Emergency Phone Number** 479-254-3404

## 2. HAZARDS IDENTIFICATION

**Classification**

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

| | |
|---|---|
| Acute toxicity - Oral | Category 4 |
| Acute toxicity - Dermal | Category 4 |

| | |
|---|---|
| Acute toxicity - Inhalation (Vapors) | Category 3 |
| Acute toxicity - Inhalation (Dusts/Mists) | Category 2 |
| Skin corrosion/irritation | Category 1 Sub-category B |
| Serious eye damage/eye irritation | Category 1 |
| Skin sensitization | Category 1 |
| Carcinogenicity | Category 1A |
| Reproductive Toxicity | Category 1A |
| Specific target organ toxicity (single exposure) | Category 3 |
| Specific target organ toxicity (repeated exposure) | Category 1 |

**GHS Label elements, including precautionary statements**

**Emergency Overview**

**Signal word** **Danger**

**Hazard Statements**
Harmful if swallowed
Harmful in contact with skin
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer
May damage fertility or the unborn child
May cause respiratory irritation
Causes damage to organs through prolonged or repeated exposure



This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold. Intended use of the product should not result in exposure to the chemical substance. This is a battery. In case of rupture: the above hazards exist.

**Appearance** Solid **Physical state** Solid **Odor** None

**Precautionary Statements - Prevention**
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves

**Precautionary Statements - Response**
Immediately call a POISON CENTER or doctor/physician
Specific treatment (see supplemental first aid instructions on this label)

**Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician

**Skin**
Call a POISON CENTER or doctor/physician if you feel unwell
Wash contaminated clothing before reuse
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
If skin irritation or rash occurs: Get medical advice/attention

**Inhalation**
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Call a POISON CENTER or doctor/physician if you feel unwell

**Ingestion**
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Do NOT induce vomiting

**Precautionary Statements - Storage**
Store locked up
Store in a well-ventilated place. Keep container tightly closed

**Precautionary Statements - Disposal**
Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

Not applicable

**Unknown Toxicity**
60 % of the mixture consists of ingredient(s) of unknown toxicity

**Other information**

Very toxic to aquatic life with long lasting effects
Repeated or prolonged skin contact may cause allergic reactions with susceptible persons

**Interactions with Other Chemicals**
Use of alcoholic beverages may enhance toxic effects.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

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| Chemical name | CAS No | Weight-% | Trade Secret |
|---|---|---|---|
| Copper | 7440-50-8 | 10 - 30 | * |
| Steel manufacture, chemicals | 65997-19-5 | 7 - 13 | * |
| Phosphate(1-), hexafluoro-, lithium | 21324-40-3 | 7 - 13 | * |
| Aluminum | 7429-90-5 | 7 - 13 | * |
| Lithium manganese oxide (LiMn2O4) | 12057-17-9 | 5 - 10 | * |
| Lithium Cobalt Oxide (CoLiO2) | 12190-79-3 | 5 - 10 | * |
| Cobalt lithium manganese nickel oxide | 182442-95-1 | 5 - 10 | * |
| Aluminum cobalt lithium nickel oxide | 193214-24-3 | 5 - 10 | * |
| Nickel | 7440-02-0 | 3 - 7 | * |

*The exact percentage (concentration) of composition has been withheld as a trade secret

## 4. FIRST AID MEASURES

**First aid measures**

**General Advice** First aid is upon rupture of sealed battery.

**Eye contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Seek immediate medical attention/advice.

**Skin contact** Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Seek immediate medical attention/advice. May cause an allergic skin reaction.

**Inhalation** Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get medical attention immediately if symptoms occur. Do not breathe dust.

**Ingestion** Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

**Self-protection of the first aider** Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear personal protective clothing (see section 8). Do not breathe dust. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

**Most important symptoms and effects, both acute and delayed**

**Most Important Symptoms and Effects** Burning sensation. Itching. Rashes. Hives. Coughing and/ or wheezing.

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician** Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization in susceptible persons. Treat symptomatically.

## 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media**
CAUTION: Use of water spray when fighting fire may be inefficient.

**Specific hazards arising from the chemical**
The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by skin contact.

**Explosion Data**
**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

**Protective equipment and precautions for firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Personal precautions** Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

**Other Information** Refer to protective measures listed in Sections 7 and 8.

**Environmental precautions**

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

**Methods and material for containment and cleaning up**

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Pick up and transfer to properly labeled containers.

## 7. HANDLING AND STORAGE

**Precautions for safe handling**

**Handling** In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection equipment.

**Conditions for safe storage, including any incompatibilities**

**Storage** Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

**Incompatible Products** Acids. Bases. Oxidizing agent.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

**Exposure Guidelines**

| Chemical name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---|---|---|---|
| Copper<br>7440-50-8 | TWA: 0.2 mg/m³ fume TWA: 1 mg/m³ Cu dust and mist | TWA: 0.1 mg/m³ fume<br>TWA: 1 mg/m³ dust and mist<br>(vacated) TWA: 0.1 mg/m³ Cu dust, fume, mist | IDLH: 100 mg/m³ dust, fume and mist<br>TWA: 1 mg/m³ dust and mist<br>TWA: 0.1 mg/m³ fume |
| Steel manufacture, chemicals<br>65997-19-5 | STEL: 10 mg/m³ Zr<br>TWA: 0.05 mg/m³ Pb TWA: 0.00005 mg/m³ Be inhalable particulate matter TWA: 1 mg/m³ Cu dust and mist TWA: 0.2 mg/m³ Se TWA: 1 mg/m³ Y TWA: 5 mg/m³ Zr TWA: 0.02 mg/m³ Mn respirable particulate matter TWA: 0.1 mg/m³ Mn inhalable particulate matter TWA: 0.5 mg/m³ Hf | TWA: 50 µg/m³ Pb TWA: 2 µg/m³ Be TWA: 0.2 mg/m³ Se TWA: 5 mg/m³ Zr Action Level: 30 µg/m³ Pb Poison;See 29 CFR 1910.1025<br>(vacated) TWA: 2 µg/m³ Be (vacated) TWA: 0.2 mg/m³ Se (vacated) TWA: 5 mg/m³ Zr<br>(vacated) STEL: 25 µg/m³ 30 min<br>(vacated) STEL: 10 mg/m³ Zr<br>(vacated) Ceiling: 5 µg/m³ (vacated) Ceiling: 5 mg/m³<br>Ceiling: 5 µg/m³ Be Ceiling: 5 mg/m³ Mn | IDLH: 4 mg/m³ Be<br>IDLH: 100 mg/m³ Cu dust and mist<br>IDLH: 500 mg/m³ Mn<br>IDLH: 1 mg/m³ Se<br>IDLH: 500 mg/m³ Y<br>IDLH: 25 mg/m³ Zr<br>IDLH: 100 mg/m³ Pb<br>IDLH: 10 mg/m³ Ni<br>IDLH: 50 mg/m³ Hf<br>Ceiling: 0.05 mg/m³ V dust and fume 15 min<br>Ceiling: 0.0005 mg/m³ Be<br>TWA: 1 mg/m³ Cu dust and mist<br>TWA: 1 mg/m³ Mn<br>TWA: 0.2 mg/m³ except Selenium hexafluoride Se<br>TWA: 1 mg/m³ Y<br>TWA: 5 mg/m³ except Zirconium tetrachloride Zr<br>TWA: 0.050 mg/m³ Pb<br>TWA: 0.015 mg/m³ except Nickel carbonyl Ni<br>TWA: 0.5 mg/m³ Hf<br>STEL: 3 mg/m³ Mn<br>STEL: 10 mg/m³ Zr |
| Phosphate(1-), hexafluoro-, lithium<br>21324-40-3 | TWA: 2.5 mg/m³ F | TWA: 2.5 mg/m³ F<br>TWA: 2.5 mg/m³ dust<br>(vacated) TWA: 2.5 mg/m³ | |
| Aluminum<br>7429-90-5 | TWA: 1 mg/m³ respirable particulate matter | TWA: 15 mg/m³ total dust<br>TWA: 5 mg/m³ respirable fraction<br>(vacated) TWA: 15 mg/m³ total dust<br>(vacated) TWA: 5 mg/m³ respirable fraction (vacated) TWA: 5 mg/m³ Al Aluminum | TWA: 10 mg/m³ total dust<br>TWA: 5 mg/m³ respirable dust |

| | | | |
|---|---|---|---|
| Lithium manganese oxide (LiMn2O4) 12057-17-9 | TWA: 0.2 mg/m³ Mn | (vacated) Ceiling: 5 mg/m³ Ceiling: 5 mg/m³ Mn | IDLH: 500 mg/m³ Mn TWA: 1 mg/m³ Mn STEL: 3 mg/m³ Mn |
| Lithium Cobalt Oxide (CoLiO2) 12190-79-3 | TWA: 0.02 mg/m³ | - | |
| Cobalt lithium manganese nickel oxide 182442-95-1 | TWA: 0.02 mg/m³ Co TWA: 0.02 mg/m³ Mn respirable particulate matter TWA: 0.1 mg/m³ Mn inhalable particulate matter | (vacated) Ceiling: 5 mg/m³ Ceiling: 5 mg/m³ Mn | IDLH: 500 mg/m³ Mn IDLH: 10 mg/m³ Ni TWA: 1 mg/m³ Mn TWA: 0.015 mg/m³ except Nickel carbonyl Ni STEL: 3 mg/m³ Mn |
| Aluminum cobalt lithium nickel oxide 193214-24-3 | TWA: 0.02 mg/m³ Co | - | |
| Nickel 7440-02-0 | TWA: 1.5 mg/m³ | TWA: 1 mg/m³ (vacated) TWA: 1 mg/m³ | IDLH: 10 mg/m³ TWA: 0.015 mg/m³ |

*ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits NIOSH IDLH Immediately Dangerous to Life or Health*

**Other Exposure Guidelines** Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992)

**Appropriate engineering controls**

**Engineering Measures** Showers
Eyewash stations
Ventilation systems

**Individual protection measures, such as personal protective equipment**

**Eye/face protection** Face protection shield.

**Skin and body protection** Wear protective gloves and protective clothing. Long sleeved clothing. Chemical resistant apron. Impervious gloves.

**Respiratory protection** If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Take off contaminated clothing and wash before reuse. Do not breathe dust. For environmental protection, remove and wash all contaminated protective equipment before re-use.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical and Chemical Properties**

| | | | |
|---|---|---|---|
| **Physical state** | Solid | | |
| **Appearance** | Solid | **Odor** | None |
| **Color** | No information available | **Odor Threshold** | No information available |

| **Property** | **Values** | **Remarks Method** |
|---|---|---|
| **pH** | No data available | None known |

| | | |
|---|---|---|
| **Melting / freezing point** | No data available | None known |
| **Boiling point / boiling range** | No data available | None known |
| **Flash Point** | No data available | None known |
| **Evaporation Rate** | No data available | None known |
| **Flammability (solid, gas)** | No data available | None known |
| **Flammability Limit in Air** | | |
| **Upper flammability limit** | No data available | |
| **Lower flammability limit** | No data available | |
| **Vapor pressure** | No data available | None known |
| **Vapor density** | No data available | None known |
| **Specific Gravity** | No data available | None known |
| **Water Solubility** | Insoluble | None known |
| **Solubility in other solvents** | No data available | None known |
| **Partition coefficient: n-octanol/water** | 0 | None known |
| **Autoignition temperature** | No data available | None known |
| **Decomposition temperature** | No data available | None known |
| **Kinematic viscosity** | No data available | None known |
| **Dynamic viscosity** | 0 | None known |
| **Explosive properties** | No data available | |
| **Oxidizing properties** | No data available | |

**Other Information**

| | |
|---|---|
| **Softening Point** | No data available |
| **VOC Content (%)** | No data available |
| **Particle Size** | No data available |
| **Particle Size Distribution** | |

## 10. STABILITY AND REACTIVITY

**Reactivity**

No data available.

**Chemical stability**
Stable under recommended storage conditions.

**Possibility of Hazardous Reactions**
None under normal processing.

**Conditions to avoid**
Exposure to air or moisture over prolonged periods. Excessive heat.

**Incompatible materials**
Acids. Bases. Oxidizing agent.

**Hazardous Decomposition Products**
None known based on information supplied.

## 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

**Product Information** Product does not present an acute toxicity hazard based on known or supplied information.

In case of rupture:.

**Inhalation** Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract. Fatal if inhaled.

**Eye contact** Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.

**Skin contact** Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May be absorbed through the skin in harmful amounts. Harmful in contact with skin.

**Ingestion** Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed.

**Component Information**

| Chemical name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|---|---|---|---|
| Nickel<br>7440-02-0 | > 9000 mg/kg ( Rat ) | - | - |

**Information on toxicological effects**

**Symptoms** Erythema (skin redness). Burning. May cause blindness. Coughing and/ or wheezing. Difficulty in breathing. Itching. Rashes. Hives.

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

**Sensitization** May cause sensitization in susceptible persons. May cause sensitization by skin contact.

**Mutagenic Effects** No information available.

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

| Chemical name | ACGIH | IARC | NTP | OSHA |
|---|---|---|---|---|
| Steel manufacture, chemicals<br>65997-19-5 | A1 | Group 1 | Known<br>Reasonably Anticipated | X |
| Lithium Cobalt Oxide (CoLiO2)<br>12190-79-3 | A3 | Group 2B | | X |
| Cobalt lithium manganese nickel oxide<br>182442-95-1 | A3 | Group 2B<br>Group 1 | Known | X |
| Aluminum cobalt lithium nickel oxide<br>193214-24-3 | A3 | Group 2B<br>Group 1 | Known | X |

| | | | | |
|---|---|---|---|---|
| Nickel<br>7440-02-0 | | Group 2B | Reasonably Anticipated | X |

*ACGIH (American Conference of Governmental Industrial Hygienists)*
*A1 - Known Human Carcinogen*
*A3 - Animal Carcinogen*
*IARC (International Agency for Research on Cancer)*
*Group 1 - Carcinogenic to Humans*
*Group 2B - Possibly Carcinogenic to Humans*
*NTP (National Toxicology Program)*
*Known - Known Carcinogen*
*Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen*
*OSHA (Occupational Safety and Health Administration of the US Department of Labor)*
*X - Present*

**Reproductive toxicity** Contains a known or suspected reproductive toxin.

**STOT - single exposure** Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from acute exposure. (STOT SE). If this product is a mixture, the classification is not based on toxicology studies for this product, but is based solely on toxicology studies for ingredients found within this product. Detailed substance and/or ingredient information may be provided in other sections of this SDS. Target organs effects listed in this document may result from a single overexposure to this product. Respiratory system.

**STOT - repeated exposure** Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).

**Chronic Toxicity** Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Effects from this product caused by acute exposure may cause permanent damage to target organs and/or may cause chronic conditions. Contains a known or suspected carcinogen. Contains a known or suspected reproductive toxin. Possible risk of irreversible effects. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse effects on the bone marrow and blood-forming system. May cause adverse liver effects.

**Target Organ Effects** Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Systemic Toxicity. Reproductive System. Blood. Central Nervous System (CNS). Central Vascular System (CVS). Kidney. Liver. Lungs. Nasal cavities. Digestive System.

**Aspiration Hazard** No information available.

**Numerical measures of toxicity Product Information**

**The following values are calculated based on chapter 3.1 of the GHS document**

**ATEmix (oral)**
327.00 mg/kg
**ATEmix (dermal)**
1,200.00 mg/kg
**ATEmix (inhalation-gas)**
400.04 ppm
**ATEmix (inhalation-dust/mist)**
0.20 mg/l
**ATEmix (inhalation-vapor)**
2.00 ATEmix

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**
Very toxic to aquatic life with long lasting effects.

| Chemical name | Toxicity to Algae | Toxicity to Fish | Toxicity to Microorganisms | Daphnia Magna (Water Flea) |
|---|---|---|---|---|
| Copper<br>7440-50-8 | 96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata) 72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata) | 96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas) 96h LC50: = 0.112 mg/L (Poecilia reticulata) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) | | 48h EC50: = 0.03 mg/L |
| Nickel<br>7440-02-0 | 72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata) | 96h LC50: > 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio) | | 48h EC50: > 100 mg/L 48h EC50: = 1 mg/L |

**Persistence and Degradability**
No information available.

**Bioaccumulation**
No information available

**Other adverse effects**
No information available.

## 13. DISPOSAL CONSIDERATIONS

**Waste treatment methods**

**Disposal methods** This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

**Contaminated Packaging** Dispose of contents/containers in accordance with local regulations.

**California Hazardous Waste Codes** 141

| Chemical name | California Hazardous Waste |
|---|---|
| Copper<br>7440-50-8 | Toxic |
| Steel manufacture, chemicals<br>65997-19-5 | Toxic |
| Aluminum<br>7429-90-5 | Ignitable powder |
| Lithium Cobalt Oxide (CoLiO2)<br>12190-79-3 | Toxic |
| Cobalt lithium manganese nickel oxide<br>182442-95-1 | Toxic |
| Aluminum cobalt lithium nickel oxide<br>193214-24-3 | Toxic |
| Nickel<br>7440-02-0 | Toxic powder<br>Ignitable powder |

## 14. TRANSPORT INFORMATION

**Note:** The transportation of primary lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. The batteries must meet the following criteria for shipment: 1. Air shipments must meet the requirements listed in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations. 2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185. 3. The transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Passenger Aircraft; Final Rule)
Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision A45 of IATA-DGR" or "special provision 188 of IMO-IMDG Code"

**DOT** NOT REGULATED
- **Proper Shipping Name** NON-REGULATED
- **Hazard Class** N/A
- **Emergency Response Guide Number** 147

**TDG** Not regulated

**MEX** Not regulated

**ICAO** Not regulated

**IATA** Not regulated
**Proper Shipping Name** NON REGULATED
**Hazard Class** N/A

**IMDG/IMO** Not regulated
**Hazard Class** N/A
**EmS-No.** F-A, S-I

**RID** Not regulated

**ADR** Not regulated

**ADN** Not regulated

## 15. REGULATORY INFORMATION

### International Inventories

TSCA Complies
DSL All components are listed either on the DSL or NDSL.

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

### US Federal Regulations

**SARA 313**
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical name | CAS No | Weight-% | SARA 313 - Threshold Values % |
|---|---|---|---|
| Copper - 7440-50-8 | 7440-50-8 | 10 - 30 | 1.0 |
| Steel manufacture, chemicals - 65997-19-5 | 65997-19-5 | 7 - 13 | 1.0<br>0.1 |
| Aluminum - 7429-90-5 | 7429-90-5 | 7 - 13 | 1.0 |
| Lithium manganese oxide (LiMn2O4) - 12057-17-9 | 12057-17-9 | 5 - 10 | 1.0 |
| Lithium Cobalt Oxide (CoLiO2) - 12190-79-3 | 12190-79-3 | 5 - 10 | 0.1 |
| Cobalt lithium manganese nickel oxide - 182442-95-1 | 182442-95-1 | 5 - 10 | 1.0<br>0.1 |
| Nickel - 7440-02-0 | 7440-02-0 | 3 - 7 | 0.1 |

**SARA 311/312 Hazard Categories**

**Acute Health Hazard** No
**Chronic Health Hazard** No
**Fire Hazard** No
**Sudden release of pressure hazard** No
**Reactive Hazard** No

**CWA (Clean Water Act)**
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

| Chemical name | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|---|---|---|---|
| Copper<br>7440-50-8 | | X | X | |
| Steel manufacture, chemicals | | X | | |

| | | | | |
|---|---|---|---|---|
| 65997-19-5 | | | | |
| Cobalt lithium manganese nickel oxide 182442-95-1 | | X | | |
| Nickel 7440-02-0 | | X | X | |

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

| Chemical name | Hazardous Substances RQs | Extremely Hazardous Substances RQs | RQ |
|---|---|---|---|
| Copper 7440-50-8 | 5000 lb | | RQ 5000 lb final RQ<br>RQ 2270 kg final RQ |
| Nickel 7440-02-0 | 100 lb | | RQ 100 lb final RQ<br>RQ 45.4 kg final RQ |

## US State Regulations

**California Proposition 65**

This product contains the following Proposition 65 chemicals.

| Chemical name | California Proposition 65 |
|---|---|
| Steel manufacture, chemicals - 65997-19-5 | Carcinogen |
| Cobalt lithium manganese nickel oxide - 182442-95-1 | Carcinogen |
| Aluminum cobalt lithium nickel oxide - 193214-24-3 | Carcinogen |
| Nickel - 7440-02-0 | Carcinogen |

**U.S. State Right-to-Know Regulations**

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| Chemical name | New Jersey | Massachusetts | Pennsylvania | Rhode Island | Illinois |
|---|---|---|---|---|---|
| Copper 7440-50-8 | X | X | X | X | X |
| Ethylene carbonate 96-49-1 | | X | X | | |
| Aluminum 7429-90-5 | X | X | X | X | |
| Diethyl carbonate 105-58-8 | X | X | X | | |
| Phosphate(1-), hexafluoro-, lithium 21324-40-3 | X | | | | |
| Steel manufacture, chemicals 65997-19-5 | X | | X | X | X |
| Lithium manganese oxide (LiMn2O4) 12057-17-9 | X | | X | X | X |
| Lithium Cobalt Oxide (CoLiO2) 12190-79-3 | X | | X | X | X |
| Cobalt lithium manganese nickel oxide 182442-95-1 | X | | X | X | X |
| Aluminum cobalt lithium nickel oxide 193214-24-3 | X | | X | | X |
| Nickel 7440-02-0 | X | X | X | X | X |

## International Regulations

### Mexico

**National occupational exposure limits**

| Chemical name | Carcinogen Status | Exposure Limits |
|---|---|---|
| Copper | | Mexico: TWA= 1 mg/m³<br>Mexico: TWA= 0.2 mg/m³<br>Mexico: STEL= 2 mg/m³ |
| Steel manufacture, chemicals | A3 | Mexico: TWA 0.15 mg/m³ |

| | | |
|---|---|---|
| | A2 | Mexico: TWA 0.002 mg/m³<br>Mexico: TWA 0.2 mg/m³<br>Mexico: TWA 5 mg/m³<br>Mexico: STEL 10 mg/m³ |
| Aluminum | | Mexico: TWA= 10 mg/m³ |
| Lithium manganese oxide (LiMn2O4) | | Mexico: TWA 0.2 mg/m³ |
| Cobalt lithium manganese nickel oxide | | Mexico: TWA 0.2 mg/m³ |
| Nickel | | Mexico: TWA 1 mg/m³ |

*A2 - Suspected Human Carcinogen*
*A3 - Confirmed Animal Carcinogen*
*Mexico - Occupational Exposure Limits - Carcinogens*

**Canada**
**WHMIS Hazard Class**
Non-controlled

## 16. OTHER INFORMATION

| | | | | |
|---|---|---|---|---|
| **NFPA** | **Health Hazards** 1 | **Flammability** 0 | **Instability** 0 | **Physical and Chemical Hazards** - |
| **HMIS** | **Health Hazards** 0 | **Flammability** 0 | **Physical Hazard** 0 | **Personal Protection** X |

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**Disclaimer**
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**End of Safety Data Sheet**