

# SAFETY DATA SHEET

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

### Product identifier

**Product Name** 88508 48v 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** The Toro Company

**Supplier Address** 8111 Lyndale Avenue South  
Bloomington  
MN  
8515  
US

**Supplier Phone Number** Phone:952-887-8515  
Contact Phone951-785-3482

**Supplier Email** eden.allen@toro.com

### Emergency telephone number

## 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                |
| Skin corrosion/irritation         | Category 1 Sub-category B |
| Serious eye damage/eye irritation | Category 1                |



|  |             |
|--|-------------|
| Carcinogenicity                                    | Category 1A |
| Specific target organ toxicity (repeated exposure) | Category 1  |

**GHS Label elements, including precautionary statements****Emergency Overview**

|   |                             |
|---|-----------------------------|
| <b>Signal word</b>  | <b>Danger</b>               |
| <b>Hazard Statements</b><br>Harmful if swallowed<br>Causes severe skin burns and eye damage<br>May cause cancer   |                             |
|    |                             |
| 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. |                             |
| <b>Appearance</b> Black   | <b>Physical state</b> Solid |
|   | <b>Odor</b> 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  
 Do not breathe dust/fume/gas/mist/vapors/spray

**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**

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
 Wash contaminated clothing before reuse

**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

**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

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

Not applicable

**Unknown Toxicity**

140 % of the mixture consists of ingredient(s) of unknown toxicity

**Other information**

May be harmful in contact with skin

Very toxic to aquatic life with long lasting effects

**Interactions with Other Chemicals**

Use of alcoholic beverages may enhance toxic effects.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name                         | CAS No      | Weight-% | Trade Secret |
|---------------------------------------|-------------|----------|--------------|
| Lithium manganese oxide (LiMn2O4)     | 12057-17-9  | 40 - 70  | *            |
| Lithium Cobalt Oxide (CoLiO2)         | 12190-79-3  | 40 - 70  | *            |
| Cobalt lithium manganese nickel oxide | 182442-95-1 | 40 - 70  | *            |
| Iron                                  | 7439-89-6   | 15 - 40  | *            |
| Graphite                              | 7782-42-5   | 15 - 40  | *            |
| Copper                                | 7440-50-8   | 10 - 30  | *            |
| Phosphate(1-), hexafluoro-, lithium   | 21324-40-3  | 7 - 13   | *            |
| Ethylene carbonate                    | 96-49-1     | 7 - 13   | *            |
| Aluminum                              | 7429-90-5   | 7 - 13   | *            |

\*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. Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

**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. Remove and isolate contaminated clothing and shoes.

**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.



|   |   |
|---|---|
| <b>Ingestion</b>                          | 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.  |
| <b>Self-protection of the first aider</b> | 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. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Use personal protective equipment as required. Wear personal protective clothing (see section 8). |

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

|  |  |
|--|--|
| <b>Most Important Symptoms and Effects</b> | Coughing and/ or wheezing. Itching. Burning sensation. |
|--|--|

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

|                           |  |
|---------------------------|--|
| <b>Notes to Physician</b> | 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. |
|---------------------------|--|

## 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Dry chemical, CO<sub>2</sub>, water spray or regular foam. Move containers from fire area if you can do it without risk.

|                   |   |
|-------------------|---|
| <b>Large Fire</b> | Move containers from fire area if you can do it without risk. |
|-------------------|---|

**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.

**Explosion Data**

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

**Protective equipment and precautions for firefighters**

Move containers from fire area if you can do it without risk.

## 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. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material.

#### **Other Information**

Refer to protective measures listed in Sections 7 and 8. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

### 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. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

#### **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. In case of insufficient ventilation, wear suitable respiratory equipment. Use only with adequate ventilation and in closed systems. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

### 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  |
|---|-------------------------------|---|---|
| Lithium manganese oxide (LiMn <sub>2</sub> O <sub>4</sub> )<br>12057-17-9 | TWA: 0.2 mg/m <sup>3</sup> Mn | (vacated) Ceiling: 5 mg/m <sup>3</sup><br>Ceiling: 5 mg/m <sup>3</sup> Mn | IDLH: 500 mg/m <sup>3</sup> Mn<br>TWA: 1 mg/m <sup>3</sup> Mn |



|  |   |   |  |
|--|---|---|--|
|  |   |   | STEL: 3 mg/m <sup>3</sup> Mn   |
| Lithium Cobalt Oxide (CoLiO <sub>2</sub> )<br>12190-79-3 | TWA: 0.02 mg/m <sup>3</sup>   | -   |  |
| Cobalt lithium manganese nickel oxide<br>182442-95-1     | TWA: 0.02 mg/m <sup>3</sup> Co<br>TWA: 0.02 mg/m <sup>3</sup> Mn<br>TWA: 0.1 mg/m <sup>3</sup> Mn | (vacated) Ceiling: 5 mg/m <sup>3</sup><br>Ceiling: 5 mg/m <sup>3</sup> Mn   | IDLH: 500 mg/m <sup>3</sup> Mn<br>IDLH: 10 mg/m <sup>3</sup> Ni<br>TWA: 1 mg/m <sup>3</sup> Mn<br>TWA: 0.015 mg/m <sup>3</sup> except Nickel carbonyl Ni<br>STEL: 3 mg/m <sup>3</sup> Mn |
| Graphite<br>7782-42-5                                    | TWA: 2 mg/m <sup>3</sup> respirable fraction<br>all forms except graphite fibers                  | TWA: 15 mg/m <sup>3</sup> total dust synthetic<br>TWA: 5 mg/m <sup>3</sup> respirable fraction synthetic<br>(vacated) TWA: 2.5 mg/m <sup>3</sup> respirable dust natural<br>(vacated) TWA: 10 mg/m <sup>3</sup> total dust synthetic<br>(vacated) TWA: 5 mg/m <sup>3</sup> respirable fraction synthetic<br>TWA: 15 mppcf natural | IDLH: 1250 mg/m <sup>3</sup><br>TWA: 2.5 mg/m <sup>3</sup> respirable dust   |
| Copper<br>7440-50-8                                      | TWA: 0.2 mg/m <sup>3</sup> fume<br>TWA: 1 mg/m <sup>3</sup> Cu dust and mist                      | TWA: 0.1 mg/m <sup>3</sup> fume<br>TWA: 1 mg/m <sup>3</sup> dust and mist<br>(vacated) TWA: 0.1 mg/m <sup>3</sup> Cu dust, fume, mist   | IDLH: 100 mg/m <sup>3</sup> dust, fume and mist<br>TWA: 1 mg/m <sup>3</sup> dust and mist<br>TWA: 0.1 mg/m <sup>3</sup> fume   |
| Phosphate(1-), hexafluoro-, lithium<br>21324-40-3        | TWA: 2.5 mg/m <sup>3</sup> F  | TWA: 2.5 mg/m <sup>3</sup> F<br>TWA: 2.5 mg/m <sup>3</sup> dust<br>(vacated) TWA: 2.5 mg/m <sup>3</sup>   |  |
| Aluminum<br>7429-90-5                                    | TWA: 1 mg/m <sup>3</sup> respirable fraction  | TWA: 15 mg/m <sup>3</sup> total dust<br>TWA: 5 mg/m <sup>3</sup> respirable fraction<br>(vacated) TWA: 15 mg/m <sup>3</sup> total dust<br>(vacated) TWA: 5 mg/m <sup>3</sup> respirable fraction<br>(vacated) TWA: 5 mg/m <sup>3</sup> Al Aluminum  | TWA: 10 mg/m <sup>3</sup> total dust<br>TWA: 5 mg/m <sup>3</sup> respirable dust   |

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** Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. 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. For environmental protection, remove and wash all contaminated protective equipment before re-use.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Physical and Chemical Properties

|                       |                          |                       |                          |
|-----------------------|--------------------------|-----------------------|--------------------------|
| <b>Physical state</b> | Solid                    | <b>Odor</b>           | None                     |
| <b>Appearance</b>     | Black                    | <b>Odor Threshold</b> | No information available |
| <b>Color</b>          | No information available |                       |                          |

| <u>Property</u>                        | <u>Values</u>      | <u>Remarks</u> | <u>Method</u> |
|--|--------------------|----------------|---------------|
| 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 in water | None known     |               |
| Solubility in other solvents           | No data available  | None known     |               |
| Partition coefficient: n-octanol/water | No data available  | 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                      | No data available  | None known     |               |
| Explosive properties                   | No data available  |                |               |
| Oxidizing properties                   | No data available  |                |               |

### Other Information

|                                   |                   |
|-----------------------------------|-------------------|
| <b>Softening Point</b>            | No data available |
| <b>VOC Content (%)</b>            | No data available |
| <b>Particle Size</b>              | No data available |
| <b>Particle Size Distribution</b> |                   |

## 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.

### Incompatible materials

Acids. Bases. Oxidizing agent.

### Hazardous Decomposition Products

None known based on information supplied.

## 11. TOXICOLOGICAL INFORMATION



**Information on likely routes of exposure**

|                            |   |
|----------------------------|---|
| <b>Product Information</b> | Product does not present an acute toxicity hazard based on known or supplied information. In case of rupture:   |
| <b>Inhalation</b>          | 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.  |
| <b>Eye contact</b>         | 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.   |
| <b>Skin contact</b>        | Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns.   |
| <b>Ingestion</b>           | 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 |
|-------------------------------|---------------------|---------------------|-----------------|
| Iron<br>7439-89-6             | = 984 mg/kg ( Rat ) | -                   | -               |
| Ethylene carbonate<br>96-49-1 | = 10 g/kg ( Rat )   | > 3 g/kg ( Rabbit ) | -               |

**Information on toxicological effects**

**Symptoms** Erythema (skin redness). Burning. May cause blindness. Coughing and/ or wheezing.

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

**Sensitization** No information available.

**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 |
|---|-------|---------------------|-------|------|
| Lithium Cobalt Oxide<br>(CoLiO <sub>2</sub> )<br>12190-79-3 | A3    | Group 2B            |       | X    |
| Cobalt lithium manganese<br>nickel oxide<br>182442-95-1     | A3    | Group 1<br>Group 2B | Known | X    |

ACGIH (American Conference of Governmental Industrial Hygienists)  
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  
 OSHA (Occupational Safety and Health Administration of the US Department of Labor)  
 X - Present

|                                 |   |
|---------------------------------|---|
| <b>Reproductive toxicity</b>    | No information available.   |
| <b>STOT - single exposure</b>   | No information available.   |
| <b>STOT - repeated exposure</b> | 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).  |
| <b>Chronic Toxicity</b>         | 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. Contains a known or suspected carcinogen. 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. |
| <b>Target Organ Effects</b>     | Blood. Central Nervous System (CNS). Central Vascular System (CVS). Eyes. Kidney. Liver. Lungs. Nasal cavities. Respiratory system. Skin. Gastrointestinal tract (GI).  |
| <b>Aspiration Hazard</b>        | 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)**

1,981.00 mg/kg

**ATEmix (dermal)**

3,000.00 mg/kg (ATE)

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

Harmful to aquatic life. Very toxic to aquatic life with long lasting effects.

| Chemical Name       | Toxicity to Algae   | Toxicity to Fish   | Toxicity to Microorganisms | Daphnia Magna (Water Flea) |
|---------------------|---|--|----------------------------|----------------------------|
| Iron<br>7439-89-6   |   | 96h LC50: = 13.6 mg/L<br>(Morone saxatilis)  |                            |                            |
| 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      |

### 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 in accordance with federal, state and local regulations.

**California Hazardous Waste Codes 141**

This product contains one or more substances that are listed with the State of California as a hazardous waste.

| Chemical Name  | California Hazardous Waste |
|--|----------------------------|
| Lithium Cobalt Oxide (CoLiO2)<br>12190-79-3          | Toxic                      |
| Cobalt lithium manganese nickel oxide<br>182442-95-1 | Toxic                      |
| Copper<br>7440-50-8                                  | Toxic                      |
| Aluminum<br>7429-90-5                                | 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**

Proper Shipping Name  
Hazard Class  
Emergency Response Guide Number

NOT REGULATED  
NON-REGULATED  
N/A  
147

**TDG**

Not regulated

**MEX**

Not regulated

**ICAO**

Not regulated

**IATA**

Not regulated



|                             |               |
|-----------------------------|---------------|
| <b>Proper Shipping Name</b> | NON REGULATED |
| <b>Hazard Class</b>         | N/A           |
| <b>IMDG/IMO</b>             | Not regulated |
| <b>Hazard Class</b>         | N/A           |
| <b>EmS-No.</b>              | F-A, S-I      |
| <b>RID</b>                  | Not regulated |
| <b>ADR</b>                  | Not regulated |
| <b>ADN</b>                  | 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 % |
|---|-------------|----------|-------------------------------|
| Lithium manganese oxide (LiMn2O4) - 12057-17-9      | 12057-17-9  | 40 - 70  | 1.0                           |
| Lithium Cobalt Oxide (CoLiO2) - 12190-79-3          | 12190-79-3  | 40 - 70  | 0.1                           |
| Cobalt lithium manganese nickel oxide - 182442-95-1 | 182442-95-1 | 40 - 70  | 1.0<br>0.1                    |
| Copper - 7440-50-8                                  | 7440-50-8   | 10 - 30  | 1.0                           |
| Aluminum - 7429-90-5                                | 7429-90-5   | 7 - 13   | 1.0                           |

#### **SARA 311/312 Hazard Categories**

|  |    |
|--|----|
| <b>Acute Health Hazard</b>               | No |
| <b>Chronic Health Hazard</b>             | No |
| <b>Fire Hazard</b>                       | No |
| <b>Sudden release of pressure hazard</b> | No |
| <b>Reactive Hazard</b>                   | 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 |
|--|-----------------------------|------------------------|---------------------------|----------------------------|
| Cobalt lithium manganese nickel oxide<br>182442-95-1 |                             | X                      |                           |                            |
| Copper<br>7440-50-8                                  |                             | 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<br>7440-50-8 | 5000 lb |  | RQ 5000 lb final RQ<br>RQ 2270 kg final RQ |
|---------------------|---------|--|--|

**US State Regulations**

**California Proposition 65**

This product contains the following Proposition 65 chemicals.

| Chemical Name                                       | California Proposition 65 |
|---|---------------------------|
| Cobalt lithium manganese nickel oxide - 182442-95-1 | Carcinogen                |

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

| Chemical Name  | New Jersey | Massachusetts | Pennsylvania | Rhode Island | Illinois |
|--|------------|---------------|--------------|--------------|----------|
| Lithium manganese oxide (LiMn2O4)<br>12057-17-9      |            |               | X            | X            | X        |
| Lithium Cobalt Oxide (CoLiO2)<br>12190-79-3          | X          |               | X            | X            | X        |
| Cobalt lithium manganese nickel oxide<br>182442-95-1 |            |               | X            | X            | X        |
| Graphite<br>7782-42-5                                | X          | X             | X            |              |          |
| Copper<br>7440-50-8                                  | X          | X             | X            | X            | X        |
| Aluminum<br>7429-90-5                                | X          | X             | X            | X            |          |

**International Regulations**

**Mexico**

**National occupational exposure limits**

| Component  | Carcinogen Status | Exposure Limits   |
|--|-------------------|---|
| Lithium manganese oxide (LiMn2O4)<br>12057-17-9 ( 40 - 70 )      |                   | Mexico: TWA 0.2 mg/m <sup>3</sup>   |
| Cobalt lithium manganese nickel oxide<br>182442-95-1 ( 40 - 70 ) |                   | Mexico: TWA 0.2 mg/m <sup>3</sup>   |
| Graphite<br>7782-42-5 ( 15 - 40 )                                |                   | Mexico: TWA= 2 mg/m <sup>3</sup>  |
| Copper<br>7440-50-8 ( 10 - 30 )                                  |                   | Mexico: TWA= 1 mg/m <sup>3</sup><br>Mexico: TWA= 0.2 mg/m <sup>3</sup><br>Mexico: STEL= 2 mg/m <sup>3</sup> |
| Aluminum<br>7429-90-5 ( 7 - 13 )                                 |                   | Mexico: TWA= 10 mg/m <sup>3</sup>   |

Mexico - Occupational Exposure Limits - Carcinogens

**Canada**

**WHMIS Hazard Class**

Not determined

**16. OTHER INFORMATION**

|             |                         |                       |                          |   |
|-------------|-------------------------|-----------------------|--------------------------|---|
| <b>NFPA</b> | <b>Health Hazards</b> 1 | <b>Flammability</b> 0 | <b>Instability</b> 0     | <b>Physical and Chemical Hazards - Personal Protection</b><br>X |
| <b>HMIS</b> | <b>Health Hazards</b> 0 | <b>Flammability</b> 0 | <b>Physical Hazard</b> 0 |   |

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|                      |                          |
|----------------------|--------------------------|
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| <b>Revision Note</b> | No information available |

**Disclaimer**

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**End of Safety Data Sheet**