SAFETY DATA SHEET

Issuing Date  No data available  Revision Date  27-Nov-2019  Revision Number  3

The supplier identified below generated this SDS using the UL SDS template. UL did not test, certify, or approve the substance described in this SDS, and all information in this SDS was provided by the supplier or was reproduced from publicly available regulatory data sources. UL makes no representations or warranties regarding the completeness or accuracy of the information in this SDS and disclaims all liability in connection with the use of this information or the substance described in this SDS. The layout, appearance and format of this SDS is © 2014 UL LLC. All rights reserved.

1. IDENTIFICATION

Product identifier

Product Name  Rechargeable Li-ion Battery A-BAT-0066

Other means of identification

Product Code(s)  1551383

Recommended use of the chemical and restrictions on use

Recommended Use  LITHIUM ION BATTERIES

Restrictions on use  No information available

Details of the supplier of the safety data sheet

Supplier Identification  Getac Technology Corp.

Address  5F, Building A, No. 209, Sec 1, Nangang Rd. Nangang Dist. Taipei Taiwan 11568 TW

Telephone  Phone:+886-2-27857888

E-mail  getacppbu@gmail.com

Emergency telephone number

Company Emergency Phone Number  +886-919985359

2. HAZARDS IDENTIFICATION

Classification

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Oral</td>
<td>Category 4</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 2A</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Category 1</td>
</tr>
</tbody>
</table>
This is a battery. In case of rupture: the above hazards exist.

**Appearance** Solid  | **Physical state** Solid  | **Odor** No information available

**GHS Label elements, including precautionary statements**

**Danger**

**Hazard statements**
Harmful if swallowed
Causes skin irritation
Causes serious eye irritation
Causes damage to organs through prolonged or repeated exposure

**Precautionary Statements - Prevention**
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
Wear protective gloves/eye protection/face protection

**Precautionary Statements - Response**
Specific treatment (see supplemental first aid instructions on this label)
Get medical advice/attention if you feel unwell

**Eyes**
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention

**Skin**
IF ON SKIN: Wash with plenty of water and soap
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash it before reuse

**Ingestion**
IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
Rinse mouth

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

**Other information**
Very toxic to aquatic life with long lasting effects.

**Unknown acute toxicity**
106 % of the mixture consists of ingredient(s) of unknown toxicity
72 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
104 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
106 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
106 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
106 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

3. COMPOSITION/INFORMATION ON INGREDIENTS
1551383 - Rechargeable Li-ion Battery A-BAT-0066  
Revision Date 27-Nov-2019

**Substance**

Not applicable.

**Mixture**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS No.</th>
<th>Weight-%</th>
<th>Hazardous Material Information Review Act registry number (HMIRA registry #)</th>
<th>Date HMIRA filed and date exemption granted (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum cobalt lithium nickel oxide</td>
<td>193214-24-3</td>
<td>41</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>19</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>17</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phosphate(1-), hexafluoro-, lithium</td>
<td>21324-40-3</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**4. FIRST AID MEASURES**

**Description of first aid measures**

**General advice**  
Show this safety data sheet to the doctor in attendance. First aid is upon rupture of sealed battery.

**Inhalation**  
Remove to fresh air. Get medical attention immediately if symptoms occur.

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

**Skin contact**  
Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

**Ingestion**  
Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician.

**Self-protection of the first aider**  
Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

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

**Symptoms**  
Burning sensation.

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

**Note to physicians**  
Treat symptomatically.

**5. FIRE-FIGHTING MEASURES**

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

**Large Fire**  
CAUTION: Use of water spray when fighting fire may be inefficient.

**Unsuitable extinguishing media**  
Do not scatter spilled material with high pressure water streams.

**Specific hazards arising from the**  
No information available.
chemical

Hazardous Combustion Products  Carbon oxides.

Explosion Data
  Sensitivity to Mechanical Impact  NONE.
  Sensitivity to Static Discharge  NONE.

Special protective equipment for fire-fighters  Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions  Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Avoid contact with skin, eyes or clothing.

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

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

Advice on safe handling  In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. 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 Conditions  Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum cobalt lithium nickel oxide</td>
<td>TWA: 0.02 mg/m³ Co inhalable particulate matter</td>
<td>-</td>
<td>IDLH: 10 mg/m³ Ni</td>
</tr>
<tr>
<td></td>
<td>193214-24-3</td>
<td></td>
<td>TWA: 0.015 mg/m³ except</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nickel carbonyl Ni</td>
</tr>
<tr>
<td>Graphite</td>
<td>TWA: 2 mg/m³ respirable particulate matter all forms except graphite fibers</td>
<td>TWA: 15 mg/m³ total dust synthetic TWA: 5 mg/m³ respirable fraction synthetic</td>
<td>IDLH: 1250 mg/m³ TWA: 2.5 mg/m³ respirable dust</td>
</tr>
<tr>
<td>7782-42-5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Chemical name | Alberta TWA | British Columbia TWA | Ontario TWA | Quebec TWA | IDLH TWA |
--- | --- | --- | --- | --- | --- |
Aluminum cobalt lithium nickel oxide 193214-24-3 | TWA: 0.02 mg/m³ | TWA: 0.02 mg/m³ | TWA: 0.02 mg/m³ | TWA: 0.02 mg/m³ | |
Graphite 7782-42-5 | TWA: 2 mg/m³ | TWA: 2 mg/m³ | TWA: 2 mg/m³ | TWA: 2 mg/m³ | |
Copper 7440-50-8 | TWA: 0.2 mg/m³ | TWA: 1 mg/m³ | TWA: 0.2 mg/m³ | TWA: 1 mg/m³ | TWA: 0.2 mg/m³ |
| TWA: 1 mg/m³ | TWA: 0.2 mg/m³ | TWA: 1 mg/m³ | TWA: 1 mg/m³ | TWA: 1 mg/m³ |
Aluminum 7429-90-5 | TWA: 10 mg/m³ | TWA: 1.0 mg/m³ | TWA: 1 mg/m³ | TWA: 10 mg/m³ | |
Phosphate(1-), hexafluoro-, lithium 21324-40-3 | TWA: 2.5 mg/m³ | TWA: 2.5 mg/m³ | TWA: 2.5 mg/m³ | TWA: 2.5 mg/m³ | TWA: 250 mg/m³ |

Other Exposure Guidelines
Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992). See section 15 for national exposure control parameters.

Appropriate engineering controls
Engineering controls
Shower
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment
Eye/face protection
If splashes are likely to occur, wear safety glasses with side-shields.
Hand protection
Wear suitable gloves. Impervious gloves.
Skin and body protection
Wear suitable protective clothing. Long sleeved clothing.
Respiratory protection
No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing.
9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Melting / freezing point</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Lower flammability limit</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Insoluble in water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
<tr>
<td>Dynamic viscosity</td>
<td>No data available</td>
<td>None known</td>
<td></td>
</tr>
</tbody>
</table>

Other Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosive properties</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Softening Point</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOC Content (%)</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid Density</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk Density</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particle Size</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particle Size Distribution</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity                       | No information available. |
Chemical stability                | Stable under normal conditions. |
Possibility of Hazardous Reactions| None under normal processing. |
Hazardous Polymerization          | Hazardous polymerization does not occur. |
Conditions to avoid                | None known based on information supplied. |
Hazardous Decomposition Products   | Carbon oxides. |
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. May cause irritation of respiratory tract.

Eye contact
Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). Irritating to eyes.

Skin contact
Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).

Ingestion
Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed. (based on components).

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms
Redness. May cause redness and tearing of the eyes.

Numerical measures of toxicity

Acute Toxicity

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

<table>
<thead>
<tr>
<th></th>
<th>ATEmix (oral)</th>
<th>ATEmix (dermal)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>707.50 mg/kg</td>
<td>15,000.00 mg/kg</td>
</tr>
</tbody>
</table>

Unknown acute toxicity

- 106 % of the mixture consists of ingredient(s) of unknown toxicity
- 72 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
- 104 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
- 106 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
- 106 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
- 106 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

Component Information

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite</td>
<td>-</td>
<td>-</td>
<td>&gt; 2000 mg/m³ (Rat) 4 h</td>
</tr>
<tr>
<td>Iron</td>
<td>= 30 g/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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

Skin corrosion/irritation
Classification based on data available for ingredients. Irritating to skin.

Serious eye damage/eye irritation
Classification based on data available for ingredients. Causes serious eye irritation.

Respiratory or skin sensitization
No information available.

Germ cell mutagenicity
No information available.

Carcinogenicity
No information available.

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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
</table>


### Legend

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
- Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)
- X - Present

### 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

Very toxic to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Toxicity to Algae</th>
<th>Toxicity to Fish</th>
<th>Toxicity to Microorganisms</th>
<th>Daphnia Magna (Water Flea)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite</td>
<td>-</td>
<td>96h LC50: &gt; 100 mg/L (Danio rerio)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Iron</td>
<td>-</td>
<td>96h LC50: = 13.6 mg/L (Morone saxatilis)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Copper</td>
<td>72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata)</td>
<td>96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 0.112 mg/L (Poecilia reticulata) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: &lt; 0.3 mg/L (Pimephales promelas)</td>
<td>-</td>
<td>48h EC50: = 0.03 mg/L</td>
</tr>
</tbody>
</table>

#### Persistence and Degradability

No information available.

#### Bioaccumulation

There is no data for this product.

#### Mobility

No information available.
Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products
Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging
Do not reuse empty containers.

California Waste Codes

141

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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>California Hazardous Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum cobalt lithium nickel oxide</td>
<td>Toxic</td>
</tr>
<tr>
<td>193214-24-3</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>Toxic</td>
</tr>
<tr>
<td>7440-50-8</td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>Ignitable powder</td>
</tr>
<tr>
<td>7429-90-5</td>
<td></td>
</tr>
</tbody>
</table>

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: NOT REGULATED
Hazard Class: NON-REGULATED
Emergency Response Guide Number: N/A

TDG

Not regulated

MEX

Not regulated

ICAO

Not regulated

IATA

Proper Shipping Name: NOT REGULATED
Hazard Class: NON REGULATED

IMDG/IMO

Not regulated
15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer  Not applicable

The Stockholm Convention on Persistent Organic Pollutants  Not applicable

The Rotterdam Convention  Not applicable

International Inventories

TSCA  Contact supplier for inventory compliance status.
DSL/NDSL  Contact supplier for inventory compliance status.
EINECS/ELINCS  Contact supplier for inventory compliance status.
ENCS  Contact supplier for inventory compliance status.
KECL  Contact supplier for inventory compliance status.
PICCS  Contact supplier for inventory compliance status.
AICS  Contact supplier for inventory compliance status.

Legend
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS No.</th>
<th>Weight-%</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum cobalt lithium nickel oxide - 193214-24-3</td>
<td>193214-24-3</td>
<td>41</td>
<td>0.1</td>
</tr>
<tr>
<td>Copper - 7440-50-8</td>
<td>7440-50-8</td>
<td>7</td>
<td>1.0</td>
</tr>
<tr>
<td>Aluminum - 7429-90-5</td>
<td>7429-90-5</td>
<td>5</td>
<td>1.0</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications. Under the amended regulations at 40 CFR 370, EPCRA 311/312 Tier II reporting for the 2017 calendar year will need to be consistent with updated hazard classifications.

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)
<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum cobalt lithium nickel oxide 193214-24-3</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper 7440-50-8</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Hazardous Substances RQs</th>
<th>Extremely Hazardous Substances RQs</th>
<th>RQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper 7440-50-8</td>
<td>5000 lb</td>
<td></td>
<td>RQ 5000 lb final RQ</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RQ 2270 kg final RQ</td>
</tr>
</tbody>
</table>

**US State Regulations**

**California Proposition 65**
This product contains the following Proposition 65 chemicals.

**Chemical name**
- Aluminum cobalt lithium nickel oxide - 193214-24-3
carcinogen, 5/7/2004

**U.S. State Right-to-Know Regulations**
This product may contain substances regulated by state right-to-know regulations.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
<th>Rhode Island</th>
<th>Illinois</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum cobalt lithium nickel oxide 193214-24-3</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Graphite 7782-42-5</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper 7440-50-8</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Aluminum 7429-90-5</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Phosphate(1-), hexafluoro-, lithium 21324-40-3</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**16. OTHER INFORMATION**

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical and Chemical Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Personal Protection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health hazards</th>
<th>Flammability</th>
<th>Physical hazards</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
</tr>
</tbody>
</table>

**Prepared By**
Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

**Revision Date**
27-Nov-2019

**Revision Note**
No information available
Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet
**Product Information Sheet**

**Panasonic Batteries**
Panasonic Industrial Devices Sales Company of America
A Division Panasonic Corporation of North America
1701 Golf Road Suite 3-1100
Rolling Meadows, IL 60008
Toll Free: 877-726-2228
Fax: 847-468-5750
Internet: na.industrial.panasonic.com/products/batteries
e-mail: oembatteries@us.panasonic.com

**Product:** Manganese Lithium (ML Type) Lithium Batteries

**Applicable models/sizes:** All ML type

**Revision:** January 1, 2020

---

The batteries referenced herein are exempt articles and are **not** subject to the OSHA Hazard Communication Standard requirement. This sheet is provided as a service to our customers.

**SDS**
Safety Data Sheets (SDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

*Because all of our batteries are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard; hence a SDS is not required.*

The following components are found in a Panasonic Manganese (ML) Lithium battery:

<table>
<thead>
<tr>
<th>Cell Components</th>
<th>Material</th>
<th>CAS #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Electrode</td>
<td>Lithium Manganese Oxide</td>
<td>12057-17-9</td>
</tr>
<tr>
<td>Negative Electrode</td>
<td>Aluminum</td>
<td>7429-90-5</td>
</tr>
<tr>
<td>Electrolyte</td>
<td>1,2-Dimethoxyethane</td>
<td>110-71-4</td>
</tr>
<tr>
<td></td>
<td>Organic Electrolyte</td>
<td>------------</td>
</tr>
</tbody>
</table>

**DISPOSAL**
These batteries contain so little lithium that they are never defined by the federal government as a reactive hazardous waste and are safe for disposal in the normal municipal waste stream. Check your local area for recycling options.

**TRANSPORTATION**
All Panasonic lithium batteries are not subject to the requirements of the Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185.

Effective January 1, 2019 all Panasonic lithium batteries can be shipped by air in accordance with International Civil Aviation Organization (ICAO), 2019-2020 edition, Section II or Section 1B or International Air Transport Association (IATA) 61th edition, Section II or Section 1B Packing Instructions (PI) 968 (Batteries), PI 969 (Batteries, packed with equipment) and PI 970 (Batteries, contained in equipment) as appropriate.

All Panasonic lithium batteries are regulated by the International Maritime Organization (IMO), 2018, 39th amendment, under Special Provisions 188 and 230.

All Panasonic lithium batteries are regulated by the ADR, 2019-2020 Edition under SP 188 and the TDG under SP 34.

---

**Notice:** The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Panasonic Industrial Company makes no warranty expressed or implied.
All Panasonic lithium cells are tested and comply with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3.

If you build any of our lithium cells into a battery pack, you must also assure that they are tested in accordance with the UN Model Regulations, Manual of Test and Criteria. Part III, subsection 38.3, 6th Revised Edition, Amendment 1. If you plan on transporting any untested prototype battery packs contact your Panasonic Sales Representative for regulatory information. Check with your air carrier before shipping. Many air carriers have additional requirements.

**First Aid**

If you get electrolyte in your eyes, flush with water for 15 minutes without rubbing and immediately contact a physician. If you get electrolyte on your skin wash the area immediately with soap and water. If irritation continues, contact a physician. If a battery is ingested, call the Rocky Mountain Poison and Drug Center at 800-222-1222 or your local poison center immediately. Lithium coin batteries lodged in the esophagus should be removed immediately. Leakage, chemical burns and perforation can occur within hours of ingestion.

**General Recommendations**

CAUTION: Risk of fire, explosion and burns. Do not recharge, crush, heat above 212°F (100°C) or incinerate.

**Fire Safety**

In case of fire, you can use a Class “D” fire extinguisher or other smothering agent such as Lith-X, copper powder or dry sand. If you use water, use enough to smother the fire. Cooling the exterior of the batteries will help prevent rupturing. Fire fighters should use self-contained breathing apparatus. Detailed information on fighting a lithium metal battery fire can be found in Guide 138 (Substances – Water – Reactive) of the US DOT Emergency Response Guide.
Panasonic Batteries
Panasonic Industrial Company
A Division Panasonic Corporation of North America
5201 Tollview Drive, 1F-3
Rolling Meadows, IL 60008
Toll Free: 877-726-2228
Fax: 847-637-4660
Internet: www.panasonic.com/industrial/batteries-oem
e-mail: oembatteries@panasonic.com

The batteries referenced herein are exempt articles and are not subject to the OSHA Hazard Communication Standard requirement. This sheet is provided as a service to our customers.

SDS
Safety Data Sheets (SDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

Because all of our batteries are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard; hence a SDS is not required.

The following components are found in a Panasonic Manganese Dioxide (CR) Lithium battery:

<table>
<thead>
<tr>
<th>Coin Cell Components</th>
<th>Material</th>
<th>Formula</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Electrode</td>
<td>Manganese Dioxide</td>
<td>MnO₂</td>
<td>1313-13-9</td>
</tr>
<tr>
<td>Negative Electrode</td>
<td>Lithium</td>
<td>Li</td>
<td>7439-93-2</td>
</tr>
<tr>
<td>Electrolyte</td>
<td>Propylene Carbonate-Solvent</td>
<td>C₄H₆O₃</td>
<td>108-32-7</td>
</tr>
<tr>
<td></td>
<td>1,2 Dimethoxyethane-Solvent</td>
<td>C₄H₁₀O₂</td>
<td>110-71-4</td>
</tr>
<tr>
<td></td>
<td>Lithium Perchlorate-Salt</td>
<td>LiClO₄</td>
<td>7791-03-9</td>
</tr>
</tbody>
</table>

DISPOSAL
Lithium batteries are neither specifically listed nor exempted from the Federal Environmental Protection Agency (EPA) hazardous waste regulations as promulgated by the Resource Conservation and Recovery Act (RCRA). The only metal of possible concern in a lithium battery is lithium that is not a listed or characteristic toxic hazardous waste. Waste lithium batteries can be considered a reactive hazardous waste if there is a significant amount of unreacted, or unconsumed lithium remaining in the spent battery. The key to disposing of a lithium battery as a non-hazardous waste is to guarantee that it is fully or mostly discharged. Once it is discharged it can be disposed of as non-hazardous waste. You can dispose of a fully charged or partially discharged lithium battery as a hazardous waste after they are first neutralized through an approved secondary treatment. The need for a secondary treatment prior to disposal is a requirement of the U.S. Land Ban Restrictions of the Hazardous and Solid Waste Amendments of 1984. A secondary treatment center can only receive these batteries as manifested hazardous waste. The waste code for charged lithium batteries is D003, reactive. In either case, button cell batteries contain so little lithium that they never qualify as a reactive hazardous waste. These batteries are safe for disposal in the normal municipal waste stream.

Disposal of large quantities of undischarged lithium batteries should be performed by permitted, professional disposal firms knowledgeable in Federal, State and local hazardous materials and hazardous waste transportation and disposal requirements. As always, households are exempt from the RCRA hazardous waste guidelines.

Notice: The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Panasonic Industrial Company makes no warranty expressed or implied.
In California, packages that contain CR lithium coin cells and the Owners/Operating Instructions of products that contain CR lithium coin cells must include the following statement: “Perchlorate Material – special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate/”.

TRANSPORTATION
All Panasonic lithium batteries are not subject to the requirements of the Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185.

Effective January 1, 2019 all Panasonic lithium batteries can be shipped by air in accordance with International Civil Aviation Organization (ICAO), 2019-2020 edition, Section II or Section 1B or International Air Transport Association (IATA) 61th edition, Section II or Section 1B Packing Instructions (PI) 968 (Batteries), PI 969 (Batteries, packed with equipment) and PI 970 (Batteries, contained in equipment) as appropriate.

All Panasonic lithium batteries are regulated by the International Maritime Organization (IMO), 2018, 39th amendment, under Special Provisions 188 and 230.

All Panasonic lithium batteries are regulated by the ADR, 2019-2020 Edition under SP 188 and the TDG under SP 34

All Panasonic lithium cells are tested and comply with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3.

If you build any of our lithium cells into a battery pack, you must also assure that they are tested in accordance with the UN Model Regulations, Manual of Test and Criteria. Part III, subsection 38.3, 6th Revised Edition, Amendment 1.

If you plan on transporting any untested prototype battery packs contact your Panasonic Sales Representative for regulatory information. Check with your air carrier before shipping. Many air carriers have additional requirements.

First Aid
If you get electrolyte in your eyes, flush with water for 15 minutes without rubbing and immediately contact a physician. If you get electrolyte on your skin wash the area immediately with soap and water. If irritation continues, contact a physician. If a battery is ingested, call the Rocky Mountain Poison and Drug Center at 800-498-8666 for the US and Canada and 303-389-1300 internationally or your local poison center immediately. Lithium coin batteries lodged in the esophagus should be removed immediately. Leakage, chemical burns and perforation can occur within hours of ingestion.

General Recommendations
CAUTION: Risk of fire, explosion and burns. Do not recharge, crush, heat above 212°F (100°C) or incinerate.

Fire Safety
In case of fire, you can use a Class “D” fire extinguisher or other smothering agent such as Lith-X, copper powder or dry sand. If you use water, use enough to smother the fire. Cooling the exterior of the batteries will help prevent rupturing. Fire fighters should use self-contained breathing apparatus. Detailed information on fighting a lithium metal battery fire can be found in Guide 138 (Substances – Water – Reactive) of the US DOT Emergency Response Guide.