# Safety Data Sheet

**According to HCS-2012 APPENDIX D TO §1910.1200**

**Version:** 1.0/EN **Revision date:**
**21**-May-2019
**Product name:Rechargeable Li-ion Battery** **Printing date:**
**21**-May-2019

## 1. Identification

***(a) Product identifier***

Product name: Rechargeable Li-ion Battery

Address: Zhaojia Industrial Park, Kaizhou District, Chongqing, China

***(b) Other means of identification***

Product description: Model: 1254
Nominal Voltage: 3.7V
Ampere-hour: 0.055Ah
Minimal Capacity: 55mAh
Weight:1.12g
Dimension:5.2mm×12.2mm(max.)

***(c) Recommended use of the chemical and restrictions on use***

Recommended use: Rechargeable Li-ion Battery
Restriction on use: No information available.

***(d) Details of the supplier of the product***

Company name(China): Chongqing VDL Electronics Co., Ltd.
Address: Zhaojia Industrial Park, Kaizhou District, Chongqing, China
E-mail: pur03@gdvdl.com
Telephone: +86-755-2996 1201(8036)

***(e) Emergency phone number***

+86-755-29961201

## 2. Hazard(s) identification

***(a) Classification of the chemical***

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 |
| Specific target organ toxicity (repeated exposure) | Category 1 |

***(b) GHS Label elements, including precautionary statements***

**Emergency Overview**

**Signal word** **Danger**

**Hazard Statements**

Harmful if swallowed Causes severe skin burns and eye damage
Causes serious eye damage
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.

**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

Contaminated work clothing should not be allowed out of the workplace

Wear protective gloves

**Precautionary Statements – Response**

Specific measures (see .? on this label)

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

**Ingestion**

IF SWALLOWED: Call a POISON CENTER or doctor/physician.

if you feel unwell, Rinse mouth. Don’t 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

***(c) Other information***

Very toxic to aquatic life with long lasting effects;

Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

***(d) Interactions with Other Chemicals***

No information available.

## 3. Composition/information on ingredients

(a) Mixtures information

| **Chemical name** | **CAS No.** | **Concentration%** |
|---|---|---|
| Lithium Cobalt Oxide | 12190-79-3 | 37.7 |
| Graphite powder | 7782-42-5 | 12.6 |
| Rubber | 69028-37-1 | 3.2 |
| Styrene-butadiene rubber(SBR) | 61789-96-6 | 2.7 |
| Polypropylene | 9003-07-0 | 3.5 |
| Polyethylene | 9002-88-4 | 3.0 |
| Lithium hexafluorophosphate | 21324-40-3 | 11.2 |
| Ethylene carbonate(EC) | 96-49-1 | 4.2 |
| Propylene carbonate(PC) | 108-32-7 | 2.8 |
| Copper | 7440-50-8 | 9.6 |
| Aluminium | 7429-90-5 | 9.5 |

## 4. First-aid measures

***(a) Description of 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. Immediate medical attention is required. 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.

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. 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).

***(b) Most important symptoms/effects, acute and delayed***

| | |
|---|---|
| Most important symptoms and effects: | Itching, Coughing and/ or wheezing. Burning sensation. |

***(c) 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. |

## 5. Fire-fighting measures

***(a) Extinguishing media***

| | |
|---|---|
| Suitable extinguishing media: | Use foam, dry powder or dry sand, $CO_2$ as appropriate. |
| Unsuitable extinguishing media: | No information available. |

***(b) Special hazards arising from the chemical***

Under fire conditions, batteries may burst and release hazardous decomposition products when exposed to a fire situation. This could result in the release of flammable or corrosive materials. Hazardous combustion products: CO, $CO_2$, Metal oxides, Irritating fumes

***(c) Special protective equipment and precautions for fire-fighters***

Firefighters must wear fire resistant protective equipment and appropriate breathing apparatus. The staff must equip with filtermask (full mask) or isolated breathing apparatus. The staff must wear the clothes which can defense the fire and the toxic gas. Put out the fire in the upwind direction. Remove the container to the open space as soon as possible. Spray water on the containers in the fireplace to keep them cool until finish extinguishment.

## 6. Accidental release measures

***(a) Personal precautions, protective equipment and emergency procedures***

| | |
|---|---|
| Personal Precautions | In case of rupture. 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. |

***(b) Environmental Precautions***

| | |
|---|---|
| Environmental Precautions | Refer to protective measures listed in Sections 7 and 8. 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. |

***(c) Methods and materials 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

***(a) 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. |

***(b) Conditions for safe storage, including any incompatibilities***

| | |
|---|---|
| Storage | Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Keep out of the reach of children. Store away from other materials. |
| Incompatible Products | Acids. Bases. Oxidizing agent. |

## 8. Exposure controls/personal protection

***(a) Control parameters***

Exposure Guidelines

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---|---|---|---|
| Lithium Cobalt Oxide (CoLiO2)<br>12190-79-3 | TWA: 0.02 mg/m³ | | |
| Graphite powder<br>7782-42-5 | TWA: 2 mg/m³ respirable fraction all forms except graphite fibers | TWA: 15 mg/m3 total dust synthetic<br>TWA: 5 mg/m3 respirable fraction synthetic<br>(vacated) TWA: 2.5 mg/m3 respirable dust natural<br>(vacated) TWA: 10 mg/m3 total dust synthetic<br>(vacated) TWA: 5 mg/m3 respirable fraction synthetic<br>TWA: 15 mppcf natural | IDLH: 1250 mg/m3<br>TWA: 2.5 mg/m3 respirable dust |
| 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 | |
| Copper<br>7440-50-8 | TWA: 0.2 mg/m3 fume<br>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 |
| Aluminum<br>7429-90-5 | TWA: 1 mg/m3 respirable fraction | 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)<br>TWA: 5 mg/m3 Al Aluminum | TWA: 10 mg/m3 total dust<br>TWA: 5 mg/m3 respirable dust |

ACGIH TLV: American Conference of Governmental Industrial Hygienists －Threshold Limit Value

OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits
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) See section 15 for national exposure control parameters |

***(b) Appropriate engineering controls***

| | |
|---|---|
| Engineering Measures | Showers<br>Eyewash stations<br>Ventilation systems |

***(c) Individual protection measures, such as personal protective equipment***

| | |
|---|---|
| Eye/Face Protection | None required for consumer use. If there is a risk of contact:. Tight sealing safety goggles. Face protection shield. |
| Skin and Body Protection | None required for consumer use. If there is a risk of contact:. Wear protective gloves and protective 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. |
| Hygiene Measures | Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. 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

| | |
|---|---|
| **(a) Appearance** | solid |
| **(b) Odor** | Odorless |
| **(c) Odor threshold** | Not available. |
| **(d) pH** | Not available. |
| **(e) Melting point/freezing point** | Not available. |
| **(f) Initial boiling point and boiling range** | Not available. |
| **(g) Flash point** | Not applicable. |
| **(h) Evaporation rate** | Not applicable. |
| **(i) Flammability** | Non flammable. |
| **(j) Upper/lower flammability or explosive limits** | Not available. |
| **(k) Vapor pressure** | Not applicable. |
| **(l) Vapor density** | Not available. |
| **(m) Relative density** | Not available. |
| **(n) Solubility(ies)** | Insoluble in water. |
| **(o) Partition coefficient: n-octanol/water** | Not available. |
| **(p) Auto-ignition temperature** | Not available. |
| **(q) Decomposition temperature** | Not available. |

| | |
|---|---|
| **(r) Viscosity** | Not available. |

## 10. Stability and reactivity

***(a) Reactivity***

Stable under recommended storage and handling conditions.

***(b) Chemical stability***

Stable under recommended storage conditions.

***(c) Possibility of hazardous reactions***

None under normal processing.

***(d) Conditions to avoid***

Exposure to air or moisture over prolonged periods.

***(e) Incompatible materials***

Strong oxidizer, strong acid.

***(f) Hazardous decomposition products***

Carbon oxides.

## 11. Toxicological information

***(a) Information on the 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.

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. May be harmful if swallowed.

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.

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.

***Component Information***

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|---|---|---|---|
| Graphite powder<br>7782-42-5 | > 10000 mg/kg ( Rat ) | | |

***(b) Information on toxicological characteristics***

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

***(C) 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 (CoLiO2)<br>12190-79-3 | A3 | Group 2B | | X |

***ACGIH (American Conference of Governmental Industrial Hygienists)***

A3-Animal Carcinogen

***IARC (International Agency for Research on Cancer)***

Group 2B-Possibly Carcinogenic to Humans

***OSHA (Occupational Safety and Health Administration of the US Department of Labor)***

X-Present

Reproductive Toxicity No information available

STOT-single exposure No information available

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. Contains a known or suspected carcinogen. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse liver effects.

Target Organ Effects Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Blood. Central Nervous System (CNS). Central Vascular System (CVS). Kidney. Liver. Lungs.

Aspiration Hazard No information available

## 12. Ecological information

***(a) Ecotoxicity***

Very toxic to aquatic life with long lasting effects.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Toxicity to | Daphnia Magna |
|---|---|---|---|---|

| | | | Microorganisms | (Water Flea) |
|---|---|---|---|---|
| Copper<br>7440-50-8 | 96h EC50:<br>0.031-0.054mg/L<br>(Pseudokirchneriella subcapitata) 72h EC50:<br>0.0426-0.0535 mg/L<br>(Pseudokirchneriella subcapitata) | 96h LC50:<br>0.0068-0.0156 mg/L<br>(Pimephales promelas) 96h LC50:<br>=0.112 mg/L<br>(Poecilia reticulata)<br>96h LC50: =0.3 mg/L<br>(Cyprinus carpio) 96h LC50: = 0.8mg/L<br>(Cyprinus carpio)<br>96h LC50: = 1.25 mg/L<br>(Lepomis macrochirus)<br>96h LC50: = 0.052 mg/L<br>(Oncorhynchus mykiss)<br>96h LC50: = 0.2 mg/L<br>(Pimephales promelas)<br>96h LC50: < 0.3 mg/L<br>(Pimephales promelas) | | 48h EC50: = 0.03 mg/L |

***(b) Persistence and Degradability***

No information available.

***(c) Bioaccumulative potential***

No information available.

***(d) Other adverse effects***

No information available.

## 13. Disposal considerations

***(a) Waste treatment methods***

Disposal methods — This material, as supplied, is not a hazardous waste according to Federal regulations (40CFR 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

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 |
| 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"

**UN number** 3480&3481
**DOT** NOT REGULATED
**Proper Shipping Name** NON REGULATED
**Hazard Class** N/A
**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

***(a) Safety, health and environmental regulations specific for the product in question***

| CAS No. | USA TSCA | EU EINECS | Japan ENCS | Korea ECL | China IECSC | Canada DSL |
|---|---|---|---|---|---|---|
| 12190-79-3 | Listed | Listed | Listed | Listed | Listed | Listed |
| 7782-42-5 | Listed | Listed | Not listed | Listed | Listed | Listed |
| 69028-37-1 | Not listed | Not listed | Listed | Listed | Listed | Not listed |
| 61789-96-6 | Not listed | Not listed | Not listed | Not listed | Listed | Not listed |
| 9003-07-0 | Listed | Listed | Listed | Listed | Listed | Listed |
| 9002-88-4 | Listed | Listed | Listed | Listed | Listed | Listed |
| 21324-40-3 | Not listed | Listed | Listed | Listed | Listed | Not listed |
| 96-49-1 | Listed | Listed | Not listed | Listed | Listed | Not listed |
| 108-32-7 | Listed | Listed | Not listed | Listed | Not listed | Not listed |
| 7440-50-8 | Not listed | Listed | Listed | Listed | Listed | Not listed |
| 7429-90-5 | Listed | Listed | Not listed | Listed | Listed | Listed |

## 16. Other information, including date of preparation or last revision

***(a) Preparation and revision information***

Date of previous revision: Not applicable. Date of this revision: 25-Feb-2018

Revision summary: The first New SDS

***(b) Abbreviations and acronyms***

| | |
|---|---|
| TSCA: | Toxic Substances Control Act, The American chemical inventory. |
| DSL | Domestic Substances List |
| EINECS: | European Inventory of Existing Commercial chemical Substances |
| ENCS | Japanese Existing and New Chemical Substances |
| ECL: | Existing Chemicals List, the Korean chemical inventory. |
| IECSC: | Inventory of existing chemical substances in China. |

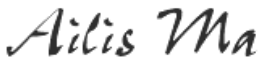
***(c) Disclaimer***

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. The information in this SDS is provided all the relevant data fully and truly. However, the information is provided without any warranty on their absolute extensiveness and accuracy. This SDS was prepared to provide safety preventive measures for the users who have got professional training. The personal user who obtained this SDS should make independent judgment for the applicability of this SDS under special conditions. In these special cases, we do not assume responsibility for the damage.

——End of the SDS——

# Safety Data Sheets (SDSs)

| | |
|---|---|
| Client | Dongguan Miyear Battery Co., Ltd |
| Add. of Client | No.44, Shahe Road, Sicun Village, Tangxia town, Dongguan, Guangdong, PRC |
| Description | Lithium-ion Polymer Battery |
| Model /Type | M801834 |
| Manufacturer | Dongguan Miyear Battery Co., Ltd |
| Add. of Manufacturer | No.44, Shahe Road, Sicun Village, Tangxia town, Dongguan, Guangdong, PRC |
| Nominal Voltage | 3.7V, 500mAh, 1.85Wh |
| Date of Receipt | 2020-01-05 |

| | | |
|---|---|---|
| Laboratory | Dongguan ZRLK Testing Technology Co., Ltd. | |
| Address | Building D, No.2, Jinyuyuan Mansion, No.18, Industrial West Road, Songshan Lake High-tech Industrial Development Zone, Dongguan, Guangdong, China | |
| Approved Signatory | Maggie.Gao |  |
| Inspected by | Ailis.Ma |  |
| Censored by | Lahm Peng |  |

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

**Product Identifier**

Product name: Lithium-ion Polymer Battery

Model: M801834

**Other means of identification**

Synonyms:none

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

Recommended Use:Used in portabl electronic equipments;

Uses advidsed against:

a) Do not dismantle, open or shred secondary cells or batteries.

b) Keep batteries out of the reach of children

Battery usage by children should be supervised. Especially keep small batteries out of reach of small children.

c) Seek medical advice immediately if a cell or a battery has been swallowed.

d) Do not expose cells or batteries to heat or fire. Avoid storage in direct sunlight.

e) Do not short-circuit a cell or a battery. Do not store cells or batteries haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

f) Do not remove a cell or battery from its original packaging until required for use.

g) Do not subject cells or batteries to mechanical shock.

h) In the event of a cell leaking, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.

i) Do not use any charger other than that specifically provided for use with the equipment.

j) Observe the plus (+) and minus (–) marks on the cell, battery and equipment and ensure correct use.

k) Do not use any cell or battery which is not designed for use with the equipment.

l) Do not mix cells of different manufacture, capacity, size or type within a device.

m) Always purchase the battery recommended by the device manufacturer for the equipment.

n) Keep cells and batteries clean and dry.

o) Wipe the cell or battery terminals with a clean dry cloth if they become dirty.

p) Secondary cells and batteries need to be charged before use. Always use the correct charger and refer to the manufacturer’s instructions or equipment manual for proper charging instructions.

q) Do not leave a battery on prolonged charge when not in use.

r) After extended periods of storage, it may be necessary to charge and discharge the cells or batteries several times to obtain maximum performance.

s) Retain the original product literature for future reference.

t) Use the cell or battery only in the application for which it was intended.

u) When possible, remove the battery from the equipment when not in use.

v) Dispose of properly.

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

Supplier Name: Dongguan Miyear Battery Co., Ltd

Address: No.44, Shahe Road, Sicun Village, Tangxia town, Dongguan, Guangdong, PRC

Telephone number of the supplier: 0086-13825714002

Fax: xxxx

Postcode: 523000

E-mail address: sunny@miyear.com

**Emergency telephone number**

**Company Emergency Phone Number:** 0086-13825714002

## 2. HAZARDS IDENTIFICATION

**Classification**

| | |
|---|---|
| Acute toxicity - Dermal | Category 3 |
| Serious eye damage/eye irritation | Category 2A |
| Carcinogenicity | Category 2 |
| Specific target organ toxicity (repeated exposure) | Category 1 |

**GHS Label elements, including precautionary statements**

**Danger**

**Hazard statements**

Toxic in contact with skin

Causes serious eye irritation

Suspected of causing cancer

Causes damage to organs through prolonged or repeated exposure

**Precautionary statements-Prevention**

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Wear protective gloves/protective clothing/eye protection/face protection

Wash face, hands and any exposed skin thoroughly after handling

Do not breathe dust/fume/gas/mist/vapors/spray

Do not eat, drink or smoke when using this product

**Precautionary Statements - Response**

If exposed or concerned: Get medical advice/attention

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 If eye irritation persists: Get medical advice/attention

**Skin**

IF ON SKIN: Wash with plenty of water and soap

Call a POISON CENTER or doctor if you feel unwell

Take off immediately all contaminated clothing and wash it before reuse

**Precautionary Statements - Storage**

Store locked up

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**Other information**

harmful if swallowed. Very toxic to aquatic life with long lasting effects.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical characterixation: Mixtures**

**Description:**

Product: Consisting of the following components.

| Common Chemical Name | Concentration (%) | CAS Number |
|---|---|---|
| Lithium Cobalt Oxide ($LiCoO_2$) | 35.5 | 12190-79-3 |
| Aluminum Foil | 9 | 7429-90-5 |
| 1.1-Difluoroethylene polymer | 1 | 24937-79-9 |
| Graphite | 18 | 7782-42-5 |
| Copper | 15 | 7440-50-8 |
| Styrene-Butadiene polymer | 1.5 | 9003-55-8 |
| Phosphate(1-),hexafluoro-,lithium | 2.8 | 21324-40-3 |
| Ethylene carbonate | 5 | 96-49-1 |
| Dimelene carbonate | 5 | 616-38-6 |
| Carbonate, methyl ethyl | 5 | 623-53-0 |
| Nickel | 2.2 | 7440-02-0 |

Note: CAS number is Chemical Abstract Service Registry Number.

N/A=Not apply.

## 4. FIRST-AID MEASURES

**First aid measures**

Eye Contact Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin Contact Remove contaminated clothing and shoes. Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

Inhalation Move to fresh air. If symptoms persist, call a physician.

Ingestion Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed

Swallowing Do not induce vomiting. Get medical attention.

**Most Important Symptoms/Effects** No information available.

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

Notes to Physician Treat symptomatically

## 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

$CO_2$, dry chemical powder, water spray.

Unsuitable Extinguishing Media:No information available.

**Specific Hazards Arising from the Chemical**

Formation of toxic gases is possible during heating or in case of fire.

In case of fire, the following can be released:

Carbon monoxide(CO)

Carbon dioxide

Other irritating and toxic gases.

**Hazardous Combustion Products**

Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact No

Sensitivity to Static Discharge No

**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. For example: Wear self-contained respiratory protective device. Wear suitable protective clothing and eye/face protection.

**Special hazards arising from the substance or mixture:**

Battery may burst and release hazardus decomposition products when exposed to a fire situation. Lithium ion batteries contain flammable electrolyte that may vent, ignite and produce sparks when subjected to high temperature(>150℃), When damaged or abused(e.g. mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in clothes proximity.

## 6. ACCIDENTAL RELEASE MEASURES

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

Personal Precautions Avoid contact with eyes.

Refer to section 8 for personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition.

Evacuate personnel to safe areas.

**Environmental precautions**

Environmental Precautions Refer to protective measures listed in Sections 7 and 8.

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

**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 Use personal protective equipment. Dam up. Cover liquid spill with sand, earth or other Non combustible absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly.

## 7. HANDLING AND STORAGE

**Precautions for safe handling**

Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.
Wash thoroughly after handling. Use this material with adequate ventilation.
The product is not explosive.

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

If the Lithium-ion Polymer Battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the Li-ion Polymer Battery periodically.
3 months: -10℃~+40℃, 45 to 85%RH
And recommended at 0℃~+35℃ for long period storage.
The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more.
The voltage for a long time storage shall be 3.7V~4.2V range.
Do not storage Lithium-ion Polymer Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.
Keep out of reach of children.
Do not expose Li-ion Polymer Battery to heat or fire. Avoid storage in direct sunlight.
Do not store together with oxidizing and acidic materials**.**
Keep ignition sources away- Do not smoke.
Store in cool, dry and well-ventilated place.

**Incompatible Products** None known.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Control parameters**

| Ingredients with limit values that require monitoring at the workplace: |
|---|
| 12190-79-3 Lithium Cobalt Oxide |

| | |
|---|---|
| TLV (USA) | 0.02mg/$m^3$ |
| MAK (Germany) | 0.1mg/$m^3$ |

**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

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Ensure adequate ventilation.

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

**Eye/Face Protection:**

**Tightly sealed goggles**

**Body protection:**

Protective work clothing.

**Skin protection:**

**Protective gloves**

**Material of gloves:**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Penetration time of glove material:**

The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

**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.

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| Physical | Form: Prismatic |

| | | |
|---|---|---|
| State | Color: Silver | |
| | Odour: Odourless | |
| | Odor Threshold: No information available | |
| Change in condition: | | Not determined. |
| pH, with indication of the concentration | | Not determined. |
| Melting point/freezing point | | Not determined. |
| Initial boiling point and Boiling range: | | Not determined. |
| Flash Point | | Not determined. |
| Evaporation rate | | Not determined. |
| Flammability (solid, gas) | | Not determined. |
| Upper/lower flammability or explosive limits | | Not determined. |
| Vapor Pressure: | | Not determined. |
| Vapor Density: | | Not determined. |
| relative density: | | Not determined. |
| Solubility in Water: | | Not determined. |
| Solubility in other solvents | | Not determined. |
| n-octanol/water partition coefficient | | Not determined. |
| Auto-ignition temperature | | Product is not self-igniting. |
| Decomposition temperature | | Not determined. |
| Odout threshold | | Not determined. |
| Evaporation rate | | Not determined. |
| Viscosity | | Not determined. |
| Other Information | | No further relevant information available. |

## 10. STABILITY AND REACTIVITY

**Reactivity:** Stable under recommended storage and handling conditions (see section 7, Handling and storage).

**Chemical stability:** Stable under normal conditions of use, storage and transport.

**Thermal decomposition/conditions to be avoided:** No decomposition if used according to specifications.

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

**Hazardous Polymerization:** Hazardous polymerization does not occur.

**Conditions to avoid:** Strong heating, fire, Incompatible materials.

**Incompatible materials:** Strong oxidizing agents. Strong acids.Base metals.

**Hazardous Decomposition Products:**Carbon oxides, Other irritating and toxic gases.

## 11. TOXICOLOGICAL INFORMATION

**Acute toxiciy:** No data available.

| LD/LC50 values relevant for classification: |
|---|
| Not available. |

**Skin corrosion/irritation:** No irritant effect.

**Serious eye damage/irritation:** Cause serious eye irritation.

**Respiratory or skin sensitization:** No sensitizing effects known.

**Specific target organ system toxicity:** No information available.

**CMR effects(carcinogenity, mutagenicity and toxicity for reproduction):** No information available.

## 12. Ecological Information

**Toxicity:**

| Acquatic toxicity: |
|---|
| No further relevant information available. |

**Persistence and degradability:** No further relevant information available.

**Bioaccumulative potential:** No further relevant information available.

**Mobility in soil:** No further relevant information available.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

**Other adverse effects:** No information available.

## 13. DISPOSAL CONSIDERATIONS

**Waste treatment methods**

Recommendation: Must not be disposed together with household garbage.

Do not allow product to reach sewage system

**Uncleaned packaging:**

Recommendation: Disposal must be made according to official regulations.

## 14. TRANSPORT INFORMATION

This report applies to by sea, by air and by land;

The Polymer Li-ion Rechargeable Battery must be of a design type proved to meet the testing requirements of the Manual of test and criteria, Part III, subsection 38.3;

The Polymer Li-ion Rechargeable Battery according to Section II of PACKING INSTRUCTION 965-967 of the 2019 IATA Dangerous Goods regulations 60$^{th}$ Edition may be transported. and applicable U.S. DOT regulations for the safe transport of Lithium-ion Polymer Battery.

Polymer Li-ion Rechargeable Battery was protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit;

Cell and batteries offered for transport must be packed in inner packaging's that completely enclose the cell or battery; to provide protection from damage or compression to the batteries, the inner packaging's must be placed in a strong rigid outer packaging;

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

The package must be handled with care and that a flammability hazard exists if the package is damaged;

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions.
- The International Air transport Association (IATA) Dangerous Goods Regulations.

UN number of lithium battery: UN3480;

UN Proper shipping name/Description (technical name): Lithium ion batteries;

- The International Maritime Dangerous Goods Code 2018 Edition (Amdt.39-18)

For lithium-ion batteries by sea, provided that packaging is strong and prevent the products from short-circuit.

UN number of lithium battery: UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries

Special Provision: International maritime dangerous goods code (IMDG) 188, 230, 310, 348, 957;

- The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA
- The Office of Hazardous Materials Safety within the US Department of Transportations' (DOT) Research and Special Programs Administration (RSPA)

## 15. REGULATORY INFORMATION

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

EU Regulation:

**Authorisations:** No information available.

**Restrictions on use:** No information available.

**Regulatory information**

| CAS No. | EU (EINECS) | **US (TSCA)** | **Japan (ENCS)** | **Canada (DSL/ NDSL)** | **Austrlia (AICS)** | **Korea (ECL)** | **China (IECSC)** |
|---|---|---|---|---|---|---|---|
| 12190-79-3 | Listed | Not listed | Not listed | NDSL | Not listed | Not listed | Not listed |
| 7429-90-5 | Listed | Listed | Listed | DSL | Listed | Listed | Listed |
| 24937-79-9 | Listed | Listed | Listed | DSL | Listed | Listed | Listed |
| 7782-42-5 | Not listed | Listed | Not listed | DSL | Listed | Listed | Listed |
| 7440-50-8 | Not listed | Listed | Not listed | DSL | Listed | Listed | Listed |
| 9003-55-8 | Listed | Not listed | Not listed | NDSL | Not listed | Not listed | Not listed |
| 21324-40-3 | Listed | Not listed | Not listed | NDSL | Not listed | Not listed | Not listed |
| 96-49-1 | Listed | Not listed | Not listed | NDSL | Not listed | Not listed | Not listed |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 616-38-6 | Listed | Not listed | Not listed | NDSL | Not listed | Not listed | Not listed |
| 623-53-0 | Listed | Not listed | Not listed | NDSL | Not listed | Not listed | Not listed |
| 7440-02-0 | Listed | Not listed | Not listed | NDSL | Not listed | Not listed | Not listed |

**Chemical safety assessment** A Chemical Safety Assessment has not been carried out.

## 16. OTHER INFORMATION

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

**********End of SDS**********