MSDS Report

Samples: Li-ion Polymer Battery L18D4PF0

Supplier Unit: SUNWODA ELECTRONIC CO., LTD.

Supplier Address: No.2, Yihe Rd, Shilong Community, Shiyan Street, Baoan District, Shenzhen City, China

MSDS No.: MSDS2020011503

Release Date: Jan 15 2020
Section 1 – Chemical Product and Company Identification

Product Name: Li-ion Polymer Battery

Sample Code: L18D4PF0

Manufacturer: SUNWODA ELECTRONIC CO., LTD

Address: No.2, Yihe Rd, Shilong Community, Shiyan Street, Baoan District, Shenzhen City, China

Post Code: 518108

Tel: 0755-29516888

Emergency Telephone: 0755-29516888

Fax: 0755-29516999

E-mail: zhaoweiwei@sunwoda.com

Section 2 – Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>MATERIAL OR INGREDIENT</th>
<th>PEL(OSHA)</th>
<th>TLV(ACGIH)</th>
<th>wt%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite (CAS# 7782-42-5)</td>
<td>5mg/m3 TWA(respirable fraction) 15mg/m3 TWA(total dust)</td>
<td>2mg/m3 TWA(respirable fraction)</td>
<td>7–25</td>
</tr>
<tr>
<td>Lithium Cobalt Oxide (CAS# 12190-79-3)</td>
<td>0.1mg/m3 TWA(as Co)</td>
<td>0.02mg/m3 TWA (as Co)</td>
<td>15–40</td>
</tr>
<tr>
<td>Hexafluoropropylene-vinylidene fluoride Copolymer (CAS#9011-17-0)</td>
<td>None established</td>
<td>None established</td>
<td>3–15</td>
</tr>
<tr>
<td>Lithium Hexafluorophosphate (CAS#21324-40-3)</td>
<td>None established</td>
<td>None established</td>
<td>0–5</td>
</tr>
<tr>
<td>Acetylene Black (CAS#1333-86-4)</td>
<td>3.5mg/m3 TWA (as carbonate black)</td>
<td>3.5mg/m3 TWA (as carbonate black)</td>
<td>0–2</td>
</tr>
</tbody>
</table>
### Section 3 – Hazards Identification

**Health Hazards (Acute and Chronic)**

These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.

**Sign/Symptoms of Exposure**

A shorted lithium battery can cause thermal and chemical burns upon contact with the skin. May be a reproductive hazard.

### Section 4 – First Aid Measures

**Eyes**

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin**

Remove contaminated clothes and rinse skin with plenty of water of shower for 15 minutes. Get medical aid.

**Inhalation**

Remove from exposure and move to fresh air immediately. Use oxygen if available.

**Ingestion**

Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

### Section 5 – Fire Fighting Measures

**Flash Point:** N/A

**Auto-Ignition Temperature:** N/A

**Extinguishing Media:** Dry powder, CO$_2$

**Special Fire-Fighting Procedures:** Self-contained breathing apparatus.
Unusual Fire and Explosion Hazards: Cell may vent when subjected to excessive heat-exposing battery contents.

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

Section 6 – Accidental Release Measures
Steps to be Taken in case Material is Released of Spilled
If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can.
The preferred response is to leave the area and allow the batteries to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste Disposal Method
It is recommended to discharge the battery to the end, handing in the abandoned batteries to related department unified, dispose of the batteries in accordance with approved local, state, and federal requirements. Consult state environmental protection agency and/or federal EPA.

Section 7 – Handling and Storage
The batteries should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Precautions to be taken in handling and storing
Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other Precautions
Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Section 8 – Exposure Controls, Personal Protection
Respiratory Protection
In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting batteries. Respiratory Protection is not necessary under conditions of normal use.

Ventilation
Not necessary under conditions of normal use.
Protective Gloves
Not necessary under conditions of normal use.

Other Protective Clothing or Equipment
Not necessary under conditions of normal use.
Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

Section 9 – Physical and Chemical Properties
Nominal Voltage: 15.36V
Rated Capacity: 2865mAh
Appearance characters: odorless, solid battery.

Section 10 – Stability and Reactivity
Stability
Stable
Conditions to Avoid
Heating, mechanical abuse and electrical abuse.

Hazardous Decomposition Products
N/A.

Hazardous Polymerization
N/A.
If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

Section 11 – Toxicological Information
Inhalation, skin contact and eye contact are possible when the battery is opened.
Exposure to internal contents, the corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrosis lung injury and membrane irritation.

Section 12 – Ecological Information
When promptly used or disposed the battery does not present environmental hazard. When disposed, keep away from water, rain and snow.

Section 13 – Disposal Considerations
APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION
If batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amount of not creation, or unconsumed lithium remaining in the spent battery. The batteries must be neutralized through an approved secondary
treatment facility prior to disposal as a hazardous waste. Recycling of battery can be done in authorized facility, through licensed waste carrier.

**Section 14 – Transport Information**

The battery models listed have a Watt-hour rating of no more than 100Wh. And shipment contains no item listed under IATA DGR Special Provision A154 and meets all requirements under UN Manual of Tests and Criteria Part III, subsection 38.3.

<table>
<thead>
<tr>
<th>No</th>
<th>ITEMS</th>
<th>RESULT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Altitude simulation</td>
<td>Pass</td>
<td>Test 1 to 5 must be conducted in sequence on the same cell or battery</td>
</tr>
<tr>
<td>2</td>
<td>Thermal test</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Vibration</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Shock</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>External short circuit</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Impact</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Overcharge</td>
<td>Pass</td>
<td>Only battery do need this test item</td>
</tr>
<tr>
<td>8</td>
<td>Forced discharge</td>
<td>Pass</td>
<td></td>
</tr>
</tbody>
</table>

Each package is capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell to cell) contact and without release of contents. Package does not exceed 10kg gross mass.

Packaging complies with the requirements of section IB of Packing Instructions 965 or 966 or 967 of 61st DGR Manual of IATA.

The article is not restricted to IMO IMDG Code (Amdt.39-18) According to special provision 188.

The goods are packaged according to the packaging requirement of ordinary goods.

More information concerning shipping, testing, marking and packaging can be obtained from Label master at [http://www.labelmaster.com](http://www.labelmaster.com).

Separate battery when shipping to prevent short-circuiting. They should be packed in strong packaging for support during transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles and wet by rain.

**Transport Fashion:** by air or by sea

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**Section 15 – Regulatory Information**

**Law Information**

《Dangerous Goods Regulation》

地址：中国深圳市宝安区石龙街道石龙社区颐和路 2 号

Address: No. 2, Tife Rd, Shilong Community, Shiyun Street, Baoan District, Shenzhen City, China

TEL: 86-755-29516888  FAX: 86-755-29516999
Section 16 – Additional Information

The above information is based on the date of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material of his particular purpose.