# MSDS Report

**Prepared For:** SHENZHEN PKCELL BATTERY CO., LTD
深圳市比苛电池有限公司
4th Building, Meital Technology Park, Guanguang Road, Longhua, Shenzhen, China.
中国深圳市龙华新区观光路美泰科技园四栋二层

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>Lithium Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>产品名称:</td>
<td>锂电池</td>
</tr>
</tbody>
</table>

| Model 型号:     | CR2032          |

<table>
<thead>
<tr>
<th>Nominal Voltage:</th>
<th>3.0V</th>
</tr>
</thead>
<tbody>
<tr>
<td>标称电压</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical Capacity:</th>
<th>210mAh</th>
</tr>
</thead>
<tbody>
<tr>
<td>典型容量</td>
<td></td>
</tr>
</tbody>
</table>

| Weight 重量:    | 2.8g            |

<table>
<thead>
<tr>
<th>Dimension 尺寸:</th>
<th>Φ20.0mm×3.1mm (D× H)</th>
</tr>
</thead>
</table>

**Prepared By:** Shenzhen NCT Testing Technology Co., Ltd.
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**Report No.** NCT18050248M1-1

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**Written by:** Kausty Huang

**Approved by:**

**Inspected by:** Hety Wang

**Date:** 2019.01.01
Material Safety Data Sheet

Section 1- Chemical Product & Company Identification

Product Name: LITHIUM BATTERY

Product Name: 锂电池

Manufacturer: SHENZHEN PKCELL BATTERY CO., LTD

Manufacture: 深圳市比苛电池有限公司

Address: 4th Building, Meitai Technology Park, Guanguang Road, Longhua, Shenzhen, China.

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Item Code: NCT18050248M1-1

Item Code: 项目号: NCT18050248M1-1

Section 2- Hazards Identification

Hazard Description

危险性描述

Not dangerous with normal use. Do not dismantle, open or shred the battery ingredients contained within or their ingredients products could be harmful.

正常使用没有危险，不能拆解、打开或分解电池，里面的材料或成分是有害的。

Primary Route(s)

吸入、食入、皮肤接触、眼睛接触。
Potential Health Effects
潜在健康影响

**Inhalation:** Vapors or mists from a ruptured battery may cause respiratory irritation. 吸入：破裂的电池散发出来的气雾会引起呼吸道刺激。

**Ingestion:** The battery ingredients contained within or their ingredients products can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

食入：电池的组成成分或原料可以导致嘴、食道和胃肠道的严重化学烧伤。

**Skin:** Skin contact with contents of an open battery can cause severe irritation or burns to the skin.

皮肤：皮肤接触到电池的内部化学材料可能会导致严重的刺激或烧伤皮肤。

**Eye:** Eye contact with contents of an open battery can cause severe irritation or burns to the eye.

眼睛：眼睛接触到电池的内部化学材料可能会导致严重的刺激或烧伤眼睛。

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Section 3- Composition/Information on Ingredients
第三部分 成分/组成信息

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Concentration or concentration ranges (%)</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese dioxide</td>
<td>12-50</td>
<td>1313-13-9</td>
</tr>
<tr>
<td>Lithium metal</td>
<td>0.5-6</td>
<td>7439-93-2</td>
</tr>
<tr>
<td>1,2-dimethoxyethane</td>
<td>1.5-3.5</td>
<td>110-71-4</td>
</tr>
<tr>
<td>Lithium Perchlorate</td>
<td>0.2-0.7</td>
<td>7791-03-9</td>
</tr>
<tr>
<td>Organic electrolyte</td>
<td>2.5-7</td>
<td>N/A</td>
</tr>
<tr>
<td>Steel</td>
<td>30-85</td>
<td>12597-68-1</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>0.5-10</td>
<td>9003-07-0</td>
</tr>
</tbody>
</table>

Note: CAS number is Chemical Abstract Service Registry Number.

注意：CAS 号是化学文摘服务注册号。

N/A = Not apply.

N/A = 不适用。
### Section 4 - First Aid Measures

<table>
<thead>
<tr>
<th><strong>Inhalation</strong></th>
<th>Remove source of contamination or move victim to fresh air. Obtain medical advice. 移除污染源或者将受害者移至新鲜空气处，寻求医生建议。</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ingestion</strong></td>
<td>Please rinse mouth thoroughly with water. Induce vomiting under the guidance of professional personage. Please seek medical treatment in time. 立即用清水漱口, 在专业人士的指导下催吐，就医。</td>
</tr>
<tr>
<td><strong>Skin contact</strong></td>
<td>Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid. 脱下已污染衣服，用大量的水冲洗至少15分钟，就医。</td>
</tr>
<tr>
<td><strong>Eye contact</strong></td>
<td>Irrigate with flowing water for 15 minutes. If irritation persists, consult a physician. 用流动水冲洗15分钟，如刺激持续发生，请求助于医生。</td>
</tr>
</tbody>
</table>

### Section 5 - Fire Fighting Measures

<table>
<thead>
<tr>
<th><strong>Characteristics of Hazard</strong></th>
<th>Toxic fumes, gases or vapors may evolve on burning. 火灾时可释放有害蒸气、气体或者蒸汽。</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hazardous Combustion Products</strong></td>
<td>Carbon monoxide, carbon dioxide, lithium oxide fumes and so on. 一氧化碳，二氧化碳，锂氧化物烟气等。</td>
</tr>
<tr>
<td><strong>Fire-extinguishing Methods and Extinguishing Media</strong></td>
<td>Please use dry powder fire extinguisher and other proper fire extinguishing media. 请使用干粉灭火器等合适的灭火介质。</td>
</tr>
<tr>
<td><strong>Attention in Fire-extinguishing</strong></td>
<td>The firemen should put on antigas masks and full fire-fighting suits. 消防人员须佩戴防毒面具，穿全身消防服。</td>
</tr>
</tbody>
</table>
Section 6- Accidental Release Measures

Personal Precautions, protective equipment, and emergency procedures
个人预防措施、防护装备及应急程序
Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 6.
限制区域，直到完成清理工作。请勿触摸泄漏的材料。穿戴适当的个人防护设备，如第 6 部分所示。

Environmental Precautions
环境保护措施
Prevent material from contaminating soil and from entering sewers or waterways.
防止物质污染土壤和进入下水道或水道。

Methods and materials for Containment
方法和材料控制
Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.
出于安全，阻止泄漏，可以用干砂或沙土来遏制液体泄漏，立即清理泄漏。

Methods and materials for cleaning up
清理的方法和材料
Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.
用惰性吸收剂(干砂或沙土)吸收溢出的材料。用带不溶性吸收剂的容器接收污染的吸收剂。收集所有受污染的吸收剂，根据第 13 部分的指令处置。用洗涤剂和水清洁污染区域，收集所有受污染的洗洁水进行适当处置。

Section 7- Handling and Storage

Handling
操作
Don’t handling the batteries in manner that allows terminals to short circuit. Do not open, disassemble, crush or burn battery.
不要以让接头短路的方式对电池进行操作，不要打开，分解，挤压或燃烧电池。

Storage
储存
Do not storage the battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.
不要将电池随意丢在盒子或抽屉里，以免电池之间或电池与其他金属物质发生短路。

Keep out of reach of children.
储存在小孩接触不到的地方。

Do not expose the battery to heat or fire. Avoid storage in direct sunlight.
不要将电池暴露在火源和热源附近，避免在阳光直射下存储。

Do not store together with oxidizing and acidic materials.
不要与氧化性及酸性物质存储在一起。
Section 8 - Exposure Controls/Personal Protection

Engineering Controls

No engineering controls are required for handling batteries that have not been damaged. Personal protective equipments for damaged batteries should include chemical resistant gloves and safety glasses.

Personal Protective Equipment

Respiratory Protection: In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use. Not necessary under conditions of normal use.

Protective Gloves: Not necessary under conditions of normal use.

Protective Equipment is recommended for venting battery: Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

Section 9 - Physical and Chemical Properties

Physical State

Form: Solid
形态：固体
Color: Silver
颜色：银色
Odour: Odorless
气味：无气味

Change in condition

pH, with indication of the concentration

Not applicable.
不适用
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/freezing point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Boiling Point, initial boiling point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Density: (Air = 1)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Density/relative density</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Insoluble</td>
</tr>
<tr>
<td>n-octanol/water partition coefficient</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Odout threshold</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammability (soil, gas)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>
### Section 10 – Stability and Reactivity

<table>
<thead>
<tr>
<th>Stability: 稳定性</th>
<th>Stable under normal temperatures and pressures. 常温常压下稳定。</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to Avoid: 应避免的条件</td>
<td>Heat above 70°C or Incinerate, Deform, Mutilate, Crush, Disassemble, Overcharge, Short circuit, Expose over a long period to humid conditions. 加热 70°C 以上或焚烧、变形、毁坏、粉碎、拆卸、过充电、短路，长时间暴露在潮湿的条件下。</td>
</tr>
<tr>
<td>Hazardous Decomposition Products: 危害分解物</td>
<td>Toxic Fumes, and may form peroxides. 有毒烟雾，并可能形成过氧化物。</td>
</tr>
<tr>
<td>Possibility of Hazardous Reaction: 危险反应的可能性</td>
<td>If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons. 如果发生泄露，避免与强氧化剂，无机酸，强碱，卤代烃接触。</td>
</tr>
</tbody>
</table>

### Section 11 – Toxicological Information

| Irritation: 刺激 | In the event of exposure to internal contents, vapor fumes may be very irritating to the eyes and skin. 内部物质暴露的情况下，蒸汽烟雾可能对眼睛和皮肤产生刺激性。 |
| Sensitization: 致敏 | Not applicable. 不适用 |
| Reproductive Toxicity: 再生毒性 | Not applicable. 不适用 |
| Toxicologically Synergistic Materials: 协同材料毒理学 | Not applicable. 不适用 |

### Section 12 – Ecological Information
### Section 13 – Disposal Considerations

第十三部分 废弃处置

<table>
<thead>
<tr>
<th>Waste Treatment</th>
<th>Recycle or dispose of in accordance with government, state &amp; local regulations. 建议遵照国家和地方法规处置或再利用。</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention for Waste Treatment</td>
<td>Deserted batteries couldn’t be treated as ordinary trash. Couldn’t be thrown into fire or placed in high temperature. Couldn’t be disected, pierced, crushed or treated similarly. Best way is recycling. 废电池不能被当做普通垃圾，不能扔进火中或置于高温下。不能解体，刺穿，破碎或类似的处理。最好的办法是回收利用。</td>
</tr>
</tbody>
</table>

### Section 14 – Transport Information

第十四部分 运输信息

This report applies to by sea, by air and by land; 本报告适用于海运，空运和陆运

The LITHIUM BATTERY (model: CR2032) tested according to the requirements of the UNITED NATIONS “Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria” Part III, subsection 38.3;
The LITHIUM 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.

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking.

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.
- The International Maritime Dangerous Goods (IMDG) Code.

UN number of lithium battery: UN3090 or UN3091;

UN Proper shipping name/Description (technical name): Lithium metal batteries or Lithium metal batteries contained in equipment or Lithium metal batteries packed with equipment.

UN Classification (Transport hazard class): Class 9 (PI968 Section IB) or N/A (PI968~970 Section II)

UN Classification (Transport hazard class): N/A

Marine pollutant(Y/N): N

The battery is not restricted according to IMO IMDG Code (inc Amdt 39-18).
Section 15 – Regulatory Information

第十五部分 法规信息

《Dangerous Goods Regulations》
《危险物品规则》
《Recommendations on the Transport of Dangerous Goods Model Regulations》
《危险货物运输的建议模型规定》
《International Maritime Dangerous Goods》
《国际海上危险货物运输》
《Technical Instructions for the Safe Transport of Dangerous Goods》
《危险货物安全运输技术指南》
《Classification and code of dangerous goods》
《危险货物分类与代码》
《Occupational Safety and Health Act》(OSHA)
《职业安全与健康法案》(OSHA)
《Toxic Substance Control Act》(TSCA)
《有毒物质控制法》(TSCA)
《Consumer Product Safety Act》(CPSA)
《消费者产品安全法案》(CPSA)
《Federal Environmental Pollution Control Act》(FEPCA)
《联邦环境污染控制法》(FEPCA)
《The Oil Pollution Act》(OPA)
《石油污染法》(OPA)
《Superfund Amendments and Reauthorization Act TitleIII(302/311/312/313)》(SARA)
《超级基金修正案和再授权法案 TitleIII(302/311/312/313)》(SARA)
《Resource Conservation and Recovery Act》(RCRA)
《资源保护和恢复法案》(RCRA)
《Safety Drinking Water Act》(CWA)
《安全饮用水法》(CWA)
《California Proposition 65》
《加州 65 号提案》
《Code of Federal Regulations》(CFR)
Section 16 – Additional Information

第十六部分 其他信息

The information above is believed to be accurate and represents the best information currently available to us. However, we makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.

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*****End of report 报告结束*****