



Material Safety Data Sheet

物质安全技术说明书

Applicant/申请商 : Dongguan Zhechang Industry Co.,Ltd.

东莞市喆铝实业有限公司

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Product Name/产品名 : Li-ion Battery

锂离子电池

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Section 1-Chemical Product and Company Identification

第1部分-化学品及企业标识

Product Name:	Li-ion Battery
样品名称:	锂离子电池
Model No. 型号:	18650
Ratings额定值::	3.7V, 1500mAh, 5.55Wh
Weight重量:	41.63g
Manufacturer:	Dongguan Zhechang Industry Co.,Ltd.
制造商:	东莞市喆铝实业有限公司
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Section 2- Hazards Identification

第2部分-危险标识

Preparation hazards and classification: 危害类别:	Not dangerous with normal use. Do not dismantle, open or shred Li-ion Battery. Exposure to the ingredients contained within or their ingredients products could be harmful. 正常使用无危险。不要拆卸、拆解或撕裂锂离子电池。接触电池成分或电池成分组成的产品可能有害。
Apperance, Color, and Odor: 外观、颜色、气味:	Solid object with no odor, no color. 无色无味固体。
Primary Route(s) of Exposure:	These chemicals are contained in a sealed Aluminum plastic film. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of





<p>侵入途径:</p>	<p>compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within the battery can occur by Inhalation, Ingestion, Eye contact and Skin contact.</p> <p>化学物质密封在铝塑膜中。只有当电芯受到机械、热或电滥用，达到损坏外壳的极点时，才有化学品暴露的风险。这种情况发生时，会通过吸入、食入、眼睛和皮肤与电解质溶液接触。</p>
<p>Potential Health Effects: 潜在健康影响:</p>	<p>ACUTE (short term): see Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.</p> <p>急性（短期）：参看第8部分“接触控制”，电池破裂后，电池中的电解质溶液有腐蚀性且能燃烧。</p> <p>Inhalation: Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.</p> <p>吸入：吸入密封电池的材料不是预期的接触途径。从破裂电池中泄漏出的气体或烟雾会刺激呼吸道。</p> <p>Ingestion: Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.</p> <p>食入：吞咽密封电池的材料不是预期的接触途径。吞咽电解液会造成口腔、食道和胃肠道的严重化学烧伤。</p> <p>Skin: Contact between the battery and skin will not cause any harm. Skin contact with contents of an open battery can cause severe irritation or burns to the skin.</p> <p>皮肤：皮肤接触电池没有危害。皮肤接触电解液会刺激皮肤或烧伤皮肤。</p> <p>Eye: Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open battery can cause severe irritation or burns to the eye.</p> <p>眼睛：眼睛和电池接触没有任何危害。眼睛接触电解液会刺激或烧伤眼睛。</p> <p>CHRONIC (long term): see Section 11 for additional toxicological data.</p> <p>慢性（长期）：参看第11部分获取更多毒理学数据。</p>
<p>Medical Conditions Aggravated by Exposure: 接触导致医治条件恶化:</p>	<p>Not applicable 不适用</p>
<p>Reported as carcinogen: 标为致癌物:</p>	<p>Not applicable 不适用</p>





Section 3- Composition/Information on Ingredient

第3部分-成分组成/成分信息

Chemical Composition 化学成分	Molecular Formula 分子式	CAS No. CAS号	Weight (%) 重量比
Lithium cobaltate	LiCoO ₂	12190-79-3	30.5
Graphite	C ₂₄ X ₁₂	7782-42-5	21.1
Polyvinylidene fluoride	(C ₂ H ₂ F ₂) _n	24937-79-9	2.1
Styrene-butadiene rubber 1500	(C ₈ H ₈ .C ₄ H ₆) _x	9003-55-8	3.1
Copper	Cu	7440-50-8	11.5
aluminium	Al	7429-90-5	8.1
Electrolyte	--	--	20.1
Others	--	--	3.5

Note: CAS number is Chemical Abstract Service Registry Number.

注: CAS号是化学文摘登记号。

N/A=Not apply. N/A=不适用

Section 4 - First Aid Measures

第4部分-急救措施

Inhalation: 吸入:	If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice. 若电解液被吸入, 移除污染源或让患者吸入新鲜空气。获取医疗建议。
Skin contact: 皮肤接触:	If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard. 若皮肤接触电解液, 要尽快移除受污染衣物、鞋子及皮革制品。立即用流速缓慢的温水冲洗至少30分钟。若感持续刺激或疼痛, 请就医。重新使用或丢弃衣物、鞋子和皮革制品前要完全净化它们。
Eye contact: 眼睛接触:	If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes





	<p>while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.</p> <p>若眼睛接触电解液，要拉开眼皮，立即用流速缓慢的温水冲洗受污染的眼睛至少30分钟。有中性盐水则尽快使用。在送往急救站途中有可能的话则继续冲洗。注意不要将污水冲洗到未受影响的眼睛里或冲到脸上。尽快转移患者到急救站。</p>
<p>Ingestion: 食入:</p>	<p>If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.</p> <p>若食入电解液，当患者迅速失去意识、无意识或抽搐时，不能往嘴里放任何东西。彻底冲洗患者口腔。切忌诱导呕吐。让患者喝60-240mL（2-8盎司）水。若患者自然呕吐，让其前倾以减少吸入电解液的风险。再次冲洗患者口腔。尽快转送患者到急救站。</p>

Section 5 –Fire Fighting Measures

第5部分-消防措施

<p>Flammable Properties 易燃性</p>	<p>In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.</p> <p>在电池破裂的情况下，电池中的电解液将是易燃的物质。与任何密封容器一样，在高温环境下电池可能会破裂，并释放易燃或具腐蚀性的物质。</p>
<p>Suitable extinguishing Media 合适的灭火介质</p>	<p>Use extinguishing media suitable for the materials that are burning. 使用对应于燃烧材料的灭火介质。</p>
<p>Unsuitable extinguishing Media 不合适的灭火介质</p>	<p>Not available 无</p>
<p>Explosion Data</p>	<p>Sensitivity to Mechanical Impact: This may result in rupture in extreme cases</p>





<p>爆炸数据</p>	<p>机械撞击敏感性: 极端情况下可能导致电池破裂。 Sensitivity to Static Discharge: Not Applicable 静电放电敏感性: 不适用</p>
<p>Specific Hazards arising from the chemical 化学反应产生的具体危险</p>	<p>Fires involving Li-ion Battery can be controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire. 可以用水控制涉及锂离子电池的火灾, 然而, 使用水灭火时, 可能会产生氢气。在密闭空间里, 氢气可以形成爆炸性混合物。在这样的情况下, 推荐使用灭火剂灭火。</p>
<p>Protective Equipment and precautions for firefighters 消防人员的保护装备及预防措施</p>	<p>As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear. 对于任何火灾, 疏散该区域并在安全距离灭火。佩戴有压力满足要求, 并带有自带式呼吸器的保护设备。在安全区域或距离灭火。使用NIOSH/MSHA批准的保护设备。</p>

Section 6 – Accidental Release Measures 第6部分-泄漏应急处理

<p>Personal Precautions, protective equipment, and emergency procedures 作业人员防护措施、防护装备和应急处置程序</p>	<p>Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8. 未清理完污染区域, 禁止进入。不接触溢出的物质。佩戴第8部分要求的合适的个人防护设备。</p>
<p>Environmental Precautions 环境保护措施</p>	<p>Prevent material from contaminating soil and from entering sewers or waterways. 防止泄漏物质污染土壤、进入污水道或水道。</p>
<p>Methods and materials for Containment 遏制的方法和材料</p>	<p>Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately. 在安全的情况下阻止漏液。用干燥的沙子或泥土阻止溢出的液体。立即清理溢出的液体。</p>
<p>Methods and materials for cleaning up 清除方法及处置材料</p>	<p>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 according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.</p>





	用惰性吸收剂（干燥沙子或泥土）吸收溢出的物质，将受污染的吸收剂铲到装废物的容器里。收集所有被污染的吸收剂并按第13部分的指南处理。用清洁剂和清水刷洗该区域，收集所有被污染的水进行适当处理。
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Section 7 – Handling and Storage

第7部分-操作处置与储存

<p>Handling 操作处置</p>	<p>Don't handling Li-ion battery with metalwork. Do not open, disassemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace. Prevent formation of dust. Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.</p> <p>不用金属制品处置电池。不打开、拆卸、挤压或燃烧电池。确保工作场所通风/排气良好。防止形成粉尘。为防止爆炸和火灾应：远离火源-不吸烟。</p>
<p>Storage 储存</p>	<p>If the batteries are subject to storage for such a long term as more than 3 months, it is recommended to recharge the Li-ion battery periodically.</p> <p>Storage Temperature</p> <p>Short period less than 3 months: -20~+45°C, 75%RH Max</p> <p>Long period more than 3 months: +5°C~+35°C,75%RH Max</p> <p>Do not storage Li-ion 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 battery to heat or fire. Avoid storage in direct sunlight. Do not store together with oxidizing and acidic materials.</p> <p>如果电池的储存期限在3个月以上，建议定期对锂离子电池充电。</p> <p>储存温度</p> <p>不超过3个月：-20~+45°C，最大75%RH</p> <p>超过3个月：+5~+35°C，最大75%RH</p> <p>不要随意将锂离子电池储存在箱子或抽屉里，这有可能导致其互相短路或被金属物品短路。放在儿童接触不到的地方。不要将锂离子电池暴露在高温或火中。避免阳光直射。不要和氧化物与酸性物质放在一起。</p>





Section 8 – Exposure Controls, Personal Protection 第8部分-接触控制和个体防护

Engineering control: 工程控制	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place. 使用局部排气通风或其他工程控制方法控制粉尘、雾、烟雾和蒸汽的来源。远离高温和明火。储存在阴凉干燥的地方。
Respiratory protection: 呼吸系统防护	Not necessary under normal conditions. 正常条件下不需要。
Skin and body Protection: 皮肤和身体防护	Not necessary under normal conditions. Wear neoprene or nitrile rubber gloves if handling an open or leaking battery. 正常条件下不需要。处理拆解过的电池或漏液电池需要戴氯丁橡胶或丁腈橡胶手套。
Eye protection: 眼睛防护	Not necessary under normal conditions. Wear safety glasses if handling an open or leaking battery. 正常条件下不需要。处理拆解过的电池或漏液电池需要戴安全眼睛。
Hands protection: 手防护	Wear neoprene or natural rubber material gloves if handling an open or leaking battery. 处理拆解过的电池或漏液电池需要戴氯丁橡胶手套或天然橡胶手套。
Others protection: 其他防护	Have a safety shower and eye wash fountain readily available in the immediate work area. 在接近工作区的地方要有便捷可用的安全淋浴装置和洗眼喷泉。
Hygiene Measures 卫生措施	Do not eat, drink, or smoke in work area. Maintain good housekeeping. 不在工作区吃喝或吸烟。保持工作区整洁。





Section 9-Physical and Chemical Properties 第9部分-理化特性

Physical State 外观与性状	Form: Solid 物态: 固体
	Color: Blue 颜色: 蓝色
	Odour: Monotony 气味: 无味
Upper/lower flammability or explosive limits 燃烧上下限或爆炸极限	Not available. 无
Solubility in Water: 溶解性	Insoluble. 不可溶
Decomposition temperature 分解温度	Not available. 无

Section 10 - Stability and Reactivity 第10部分-稳定性和反应性

Stability 稳定性	The product is stable under normal conditions. 该产品在正常条件下是稳定的。
Conditions to Avoid (e.g. static discharge, shock or vibration) 应避免的条件 (例如: 静 电放电, 撞击或震动)	Do not subject Li-ion Battery to mechanical shock. Vibration encountered during transportation does not cause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse. 不使锂离子电池受到机械冲击。 运输过程中的振动不会导致漏液、起火或爆炸。 不要拆卸、挤压、短路电池或者进行不正确的极性安装。避免机械滥用或电滥 用。
Hazardous Decomposition Products 危险的分解产物	This material may release toxic fumes if burned or exposed to fire. 这种材料燃烧或暴露在火中可能会释放有毒烟雾。





Section 11- Toxicological Information

第11部分-毒理学信息

Irritation 刺激性	Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur. 只有当电芯受到机械、热或电滥用，达到损坏外壳的极点时，才有刺激性的风险。这种情况发生时，可能引起皮肤、眼睛和呼吸道的刺激。
Sensitization 致敏性	Not Available 无
Neurological Effects 神经系统影响	Not Available 无
Teratogenicity 致畸性	Not Available 无
Reproductive Toxicity 生殖毒性	Not Available 无
Mutagenicity (Genetic Effects) 致突变性（遗传效应）	Not Available 无

Section 12- Ecological Information

第12部分-生态信息

General note 一般说明	Water hazard class 1(Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. 水危害等级（自我评估）：对水有轻微危害。 不要让纯品或其中大部分进入地下水、水道或污水系统。
Anticipated behavior of a chemical product in environment/possible environmental impace/ecotoxicity 化学品在环境中的预期行为/可能对环境在造成的影响/生态毒性	Do not discard Li-ion battery haphazardly. 不要随意丢弃锂离子电池。





Section 13- Disposal Considerations

第13部分-废弃处置

Product disposal recommendation: Observe local laws and regulations.

物品废弃处置建议：遵守当地法律法规。

Packaging disposal recommendation: Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't disassembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local laws and regulations.

包装废弃处置建议：注意废弃电池可能会引起火灾，用胶带包住电池端子以隔离它们。完全清空容器（无水珠、无粉末，要仔细擦拭）。容器可循环使用或二次利用。遵守当地法律法规。

For purpose of protecting environment and human health, do not throw batteries as municipal waste, and sort the batteries for recycling.

为保护环境和人群健康，不要将电池当城市垃圾丢弃，将电池分类以回收。

Section 14- Transport Information

第14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、空运和陆路。

The Li-ion Battery (model: 18650) has passed the test the UN manual of tests and Criteria, Part III, subsection 38.3, according to the report ID: WSCT-BATT18012988A

该锂离子电池（型号：18650）已通过UN38.3测试，依据的报告编号为：WSCT-BATT18012988A

The Li-ion Battery/Cell 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;

该锂离子电池(芯)已加以保护防止短路。这包括防止同一包装件内可能导致短路的导电材料与电池直接接触。

The Li-ion Battery/Cell according to Section II/Section IB of PACKING INSTRUCTION 965, or Section II of PACKING INSTRUCTION 966~967 of the 2018IATA Dangerous Goods regulations 59th Edition may be transported. and applicable U.S. DOT regulations for the safe transport of Li-ion Battery.

该锂离子电池(芯)依据2018IATA危险品运输条例59版中965II/965IB或966-967II方式可进行运输，也符合美国锂离子安全运输要求。

More information concerning shipping, testing, marking and packaging can be obtained from label master at <http://www.labelmaster.com/>.

更多关于航运、测试、标记和包装的信息可从 label master 上获取：<http://www.labelmaster.com/>。

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.

包装件在运输、搬运和堆放过程中应合理放置以避免机械损坏。包装材料选取和包装设计应能防止意外电传导、





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电池端子腐蚀以及湿气侵入。

The package must be handled with care and that a flammability hazard exists if the package is damaged;
包装件必须小心搬运，包装件损坏会有燃烧危险。

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.

关于运输要求，引用参考下列规定：

- 国际民用航空组织（ICAO）技术说明；
- 国际航空运输协会（IATA）关于危险货物的规定。

UN number of lithium battery:UN3480 or UN3481

锂电池的UN编号是：UN3480或UN3481

Marine pollutant(Y/N): Y;

海洋污染物（是/否）：是

- The International Maritime Dangerous Goods (IMDG) Code.

-国际海运危险货物（IMDG）法规。

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

锂电池的海运，须用坚固包装以及防止电池短路。

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

特殊规定：国际海运危险危险品法规（IMDG）188、230、310、348、957





Section 15 – Regulatory Information

第15部分-法规信息

OSHA hazard communication standard (29 CFR 1910.1200)

OSHA 危险交通标准 (29 CFR 1910.1200)

 Hazardous 危险

 ✓

Non-hazardous 非危险

Section 16 – Additional Information

第16部分-其他信息

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