



# 圆柱型锂离子电芯规格书

## Specification of Cylindrical Lithium-ion Rechargeable Cell

电芯型号 : INR18650-25P

Model : INR18650-25P

Customer Approval 客户确认	Sign签名	Date日期
	Company Name: 公司名称:	
Company Stamp: 公司印章:		

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### 1.Scope 适用范围

This product specification has been prepared to specify theCylindricalLithium-ionCell to be supplied to the customer by HENGDIAN GROUP DMEGC MAGNETICS Co.,Ltd.

本规格书适用于由横店集团东磁股份有限公司生产的圆柱型锂离子电芯。

### 2.Description and Model 型号及说明

2.1 Description 说明 Cell (Cylindrical Lithium-Ion Cell) 圆柱型锂离子电芯

2.2 Model 电芯型号 INR18650-25P

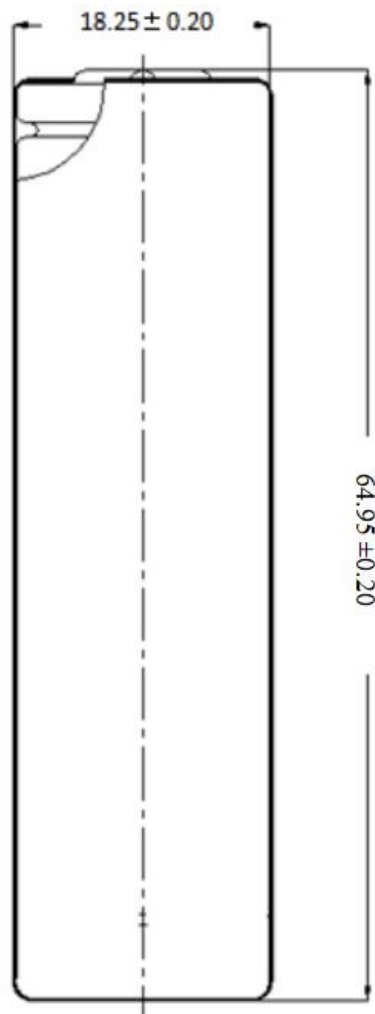
### 3.Cell specification 电芯特性

NO. 序号	ITEM 项目	SPECIFICATION 特性规格
3.1	Normal capacity 标称容量	2500mAh@0.2C
3.2	Minimum capacity 最小容量	2400mAh@0.2C (Discharge the cell from 4.2V to 2.50V by 0.2C current) (电芯以 0.2C 从 4.2V 放电至 2.50V)
3.3	Internal resistance 内阻	≤18mΩ(ACIR)
3.4	Normal voltage 标称电压	3.7V
3.5	Charging voltage 充电电压	4.2 V
3.6	Discharge ending voltage 放电终止电压	2.5 V
3.7	Standard charging current 标准充电电流	0.5C
3.8	Standard charge cut-off current 标准充电截止电流	0.02C
3.9	Standard discharge current 标准放电电流	20A
3.10	Max charge current (continuous) 最大持续充电电流	1.25A(50°C>T≥40°C) 4A(40>T≥15°C) 0.5A(15°C>T≥0°C)
3.11	Max discharge current (continuous) 最大持续放电电流	20A(60°C>T≥20°C) 15A (20°C>T≥0°C) 10A (0°C>T≥-10°C)
3.12	Cell Dimension 电芯尺寸	Height (高度) : 64.95mm±0.20 mm Diameter (直径) :18.25 mm±0.20 mm Refer to the attached drawing 1 参考附图 1

3.13	Weight 重量	<47g
3.14	Operating Temperature (surface temperature) 工作温度 (电芯表面温度)	Charge 充电时: 0 to 50°C Discharge 放电时: -20 to 80°C
3.15	Storage Temperature 存储温度	1 year : -20~25°C ≤70%RH 3 months : -20~45°C ≤70%RH 1 month : -20~60°C ≤70%RH

#### 4. Outline Dimensions 外形尺寸

See the Attached drawing1 附图 1 单位: mm



#### 5. Standard Test Conditions 标准试验条件

##### 5.1 Environmental Conditions 环境条件

Unless otherwise specified, all tests stated in this specification are conducted at temperature  $25 \pm 2^\circ\text{C}$  and humidity  $65 \pm 20\%$ .  
除非有特殊说明, 所有测试的环境条件要求如下: 温度  $25 \pm 2^\circ\text{C}$ 、湿度  $65 \pm 20\%$ 。



## 5.2 Requirement of the testing equipment 测量仪表要求

Voltage meter: The voltage tester internal resistance is  $\geq 10 \text{ K}\Omega/\text{V}$ .

电压仪表要求：测量电压的仪表内阻不小于  $10\text{K}\Omega/\text{V}$ 。

The voltage and current measurement device accuracy grade :  $0.5\text{mV}$  and  $0.5\text{mA}$  or higher.

电压、电流测量仪器精度等级：不低于  $0.5\text{mV}$  和  $0.5\text{mA}$ 。

AC Impedance meter :  $1\text{KHz}$ .

交流阻抗仪测量频率： $1\text{KHz}$ 。

Temperature meter precision :  $\leq 0.5^\circ\text{C}$ .

温度测试仪精度： $\leq 0.5^\circ\text{C}$ 。

Slide caliper :  $0.01\text{mm}$ .

游标卡尺精度： $0.01\text{mm}$ 。

Electronic scale :  $0.1\text{g}$ .

电子秤精度： $0.1\text{g}$ 。

## 6、Characteristics 特性

### 6.1 Standard charge 标准充电

This "Standard charge" means charging the cell with constant current  $0.5\text{C}$  and then with constant voltage  $4.2\text{V}$ ,  $0.02\text{C}$  cut-off at  $25\pm 2^\circ\text{C}$ .

标准充电定义为  $25\pm 2^\circ\text{C}$ 下， $0.5\text{C}$  恒流充电至截止电压  $4.2\text{V}$  转恒压充电，恒压截止电流至  $0.02\text{C}$ 。

### 6.2 Rapidcharge 快速充电

This "Rapid charge" means charging the cell with constant current  $4\text{A}$  and then with constant voltage  $4.2\text{V}$   $0.05\text{C}$  cut-off at  $25\pm 2^\circ\text{C}$ .

快速充电定义为  $25\pm 2^\circ\text{C}$ 下， $4\text{A}$  恒流充电至截止电压  $4.2\text{V}$  转恒压充电，恒压截止电流至  $0.05\text{C}$ 。

### 6.3 Temperature dependence of discharge capacity 温度与放电容量的关系

Capacity comparison at each temperature, measured with discharge constant current  $10\text{A}$  and  $2.5\text{V}$  cut-off after the standard charge is as follows.

不同温度下容量的对比，按如下形式测试，标准充电后按  $10\text{A}$  恒流放电至截止电压  $2.5\text{V}$  所得到的容量，数据如下：

Discharge temperature 放电温度			
$-10^\circ\text{C}$	$0^\circ\text{C}$	$25^\circ\text{C}$	$60^\circ\text{C}$
$\geq 60\%$	$\geq 80\%$	$100\%$	$\geq 95\%$

Note: If charge temperature and discharge temperature is not the same, the interval for temperature change is 2 hours.

备注：如果充电温度和放电温度不同，电芯在放电前需要先搁置至少 2h。

### 6.4 Discharge rate capabilities 倍率放电性能

Discharge capacity is measured with the various currents in under table and  $2.5\text{V}$  cut-off after the Standard charge at  $25\pm 2^\circ\text{C}$ .

电芯在  $25\pm 2^\circ\text{C}$ 环境下，标准充电后，以下表中的不同电流放电至  $2.5\text{V}$  的放电容量。



DischargeCondition 放电条件					
Current 电流	0.5A	5A	10A	15A	20A
Relative Capacity 容量比率	100%	≥95%	≥95%	≥95%	≥95%

### 6.5 Cycle life 循环测试

Each cell is charged in accordance with 6.1, and stored for 5 minutes, then discharged to cut-off voltage 2.5V at a constant current of 8C, after that, stored 45 minutes prior to next charge/discharge cycle. The cell shall be continuously charged and discharged for 300 times at 25±2°C.

电芯按 6.1 规定充电结束后，搁置 5min，然后以 8C 电流放电至终止电压 2.5V，放电结束后，搁置 45min，再进行下一次充放电循环。电芯在 25±2°C 环境下，连续进行充放电循环 300 次。

After 300 cycles, Capacity Retention = Cap(300th)/Cap(Av10) ≥ 80%

300 次循环后，容量保持率 ≥ 80%。

### 6.6 Storage characteristics 储存特性

Capacity after storage for 28 days at 25±2 °C after the Standard charged measured with discharge current 10A with 2.5V cut-off at 25±2°C. Compared with discharge constant current 10A at 25±2°C before storage, the capacity retention rate and recovery rate were tested.

电芯标准充电后，在 25±2 °C 环境下存储 28 天，然后在 25±2°C 环境下以 10A 放电至 2.5V，对比存储前 25±2°C 10A 放电容量，测试容量保持率和恢复率。

$$\text{Capacity retention} = \frac{\text{Residual capacity after the storage}}{\text{Initial Capacity}} \geq 85\%$$

$$\text{容量保持率} = \frac{\text{存储后剩余容量}}{\text{初始容量}} \geq 85\%$$

$$\text{Capacity recovery} = \frac{\text{Recovery capacity after the storage}}{\text{Initial Capacity}} \geq 90\%$$

$$\text{容量恢复率} = \frac{\text{存储后恢复容量}}{\text{初始容量}} \geq 90\%$$

### 6.7 Status of the cell as of ex-factory 电芯出厂状态

The cell should be shipped in 3.500V ~ 3.700V Charging voltage range.

电芯运输过程中，电压应在 3.500V ~ 3.700V 范围内。

## 7、Safety 安全性能

All below tests are carried out on the equipment with forced ventilation and explosion-proof device. Befre test, all cells should be charged in accordance with 6.1, and stored 24 hours prior for testing.

下述试验应在有强制排风条件及防爆措施的装置内进行，在试验前所有的电芯都按 6.1 规定标准充电方式充电，并搁置 24h 后，再进行以下试验。

Test Item 测试项目	Test Method 测试方法	Criteria 测试标准
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7.1	Crush Test 挤压测试	<p>A cell is to be crushed between two flat surfaces. The force for the crushing is to be applied by a hydraulic ram or similar force mechanism. The flat surfaces are to be brought in contact with the cells and the crushing is to be continued until an applied force of <math>13\pm 1</math> KN is reached. Once the maximum force has been obtained is to be released.</p> <p>将电芯置于两个挤压平面之间，用液压油缸或类似的力挤压，挤压面与电芯接触，逐渐增加压力值<math>13\pm 1</math>KN后停止。</p>	<p>No explosion, no fire 不起火、不爆炸</p>
7.2	Heating Test 加热测试	<p>A cell is to be heated in a gravity convection or circulating air oven. The temperature of the oven is to be raised at a rate of <math>5^{\circ}\text{C}</math> per minute to a temperature of <math>130\pm 2^{\circ}\text{C}</math> and remain for 30 minutes and observed for 1 hour.</p> <p>将电芯放在电热鼓风干燥箱中加热，温度以<math>5^{\circ}\text{C}/\text{min}</math>的速率由室温升至<math>130^{\circ}\text{C}</math>并保持30min，观察1h。</p>	<p>No explosion, no fire 不起火、不爆炸</p>
7.3	Over-charge Test 过充电	<p>A cell is is charged in accordance with 6.1, and then charged with charge current of 1C for 1h or charge to 1.5 times the max changing voltage, observe for 1h .</p> <p>电池按规定方法充电后，继续1C充电1h或者充电至额定电压的1.5倍，观察1h。</p>	<p>No explosion, no fire 不起火、不爆炸</p>
7.4	Short-circuit Test 短路测试	<p>Short-circuit the standard charged cell by connecting positive and negative terminal 10min by less than <math>100\text{ m}\Omega</math> wire.</p> <p>短接电芯的正负极10min，外部线路总电阻小于<math>100\text{ m}\Omega</math>。</p>	<p>No explosion, no fire 不起火、不爆炸</p>
7.5	Low Pressure 低气压	<p>Each fully charged cell is placed in a vacuum chamber with the ambient temperature (<math>20\pm 5^{\circ}\text{C}</math> ). Once the chamber has been sealed, its internal pressure is gradually reduced to a pressure equal to or less than <math>11.6\text{KPa}</math> held at that value for 6 hours. And it need take 1 hour to observe.</p> <p>将电芯放入温度为<math>20\pm 5^{\circ}\text{C}</math>的低气压箱中，调节试验箱中气压为<math>11.6\text{KPa}</math>，静置6h后观察1h。</p>	<p>No explosion, no fire, no leakage 不起火、不爆炸、不漏液</p>
7.6	Seawater Immersion 海水浸泡	<p>Each fully charged cell is immersed in 3.5% NaCl solution(weight percent, this solution concentration is same to seawater) for 2 hours.</p> <p>将电芯完全浸没于质量分数为3.5%NaCl溶液中，浸泡2h。</p>	<p>No explosion, no fire 不起火、不爆炸</p>
7.7	Temperature Cycling 温度循环	<p>The fully charged cell shall be stored at the test temperature of <math>75\pm 2^{\circ}\text{C}</math> for at least 6 hours, and then at the test temperature of <math>-40\pm 2^{\circ}\text{C}</math> for at least 6 hours. The maximum time interval between the two extreme test temperatures is 30 minutes. This procedure must be repeated 10 times, followed by the storage of all test cells and battery packs at ambient temperature (<math>20\pm 5^{\circ}\text{C}</math>) for 24 hours</p> <p>满电电池在试验温度为<math>75\pm 2^{\circ}\text{C}</math>下存放至少6小时，接着在试验温度为<math>-40\pm 2^{\circ}\text{C}</math>下存放至少6小时。两个极端试验温度之间的最大时间间隔为 30 分钟。这一程序须重复 10 次，接着将所有试验电池和电池组在环境温度（<math>20\pm 5^{\circ}\text{C}</math>）下存放 24 小时</p>	<p>No explosion, no fire, no leakage 不起火、不爆炸、不漏液</p>



7.8	Drop Test 跌落测试	At normal temperature, the fully charged fresh cell will fall freely onto the cement road surface at a drop height of 1 m. The two end surfaces of the cell dropped once each, and the cylinder dropped 2 times. A total of 4 drop tests were carried out, and the appearance was observed after the experiment was placed for 1h. 常温下将充满电的新鲜电芯按 1m 的跌落高度自由落体跌落于水泥路面上。电芯两个端面各跌落 1 次，圆柱面跌落 2 次，共计进行 4 次跌落试验，实验放置 1h 再观察外观。	No explosion, no fire 不起火、不爆炸
7.9	Over-discharge Test 过放测试	A cell is charged in accordance with 6.1, then discharged by 1C current for 90 min and observed for 1 hour. 电芯按6.1规定充电结束后，以1C电流放电90min，观察1h。	No explosion, no fire, no leakage 不起火、不爆炸、不漏液
7.10	Vibration characteristics 振动性能	After standard fully charge, cell shall be attached to a vibration table directly and subjected to vibration that consists of 10 Hz to 55 Hz to 10 Hz at the speed of 1Hz/min in 90-100 mins. The total excursion of the vibration is 0.8mm (0.060 inches). The cell shall be vibrated in each direction along axis of the cylinder and the vertical directions of axis of the cylinder. 将满电电芯放在振动实验台上，在90-100mins由10 Hz到55 Hz再到10Hz以1Hz/min的速率变化，振幅为0.8mm(0.060英寸)进行振动实验。电芯在电芯的轴向和与电芯轴向垂直的两个方向上振动。	No explosion, no fire, no leakage 不起火、不爆炸、不漏液

There are no guarantees for other security test items.

对于除此以外的安全测试项目，不做保证。

### 8. Guarantee 保证

The period of warranty is one year from the date of shipment. DMEGC is not liable if the defects is due to customer's abuse or misuse.

电池的保质期从出货之日算起为一年。由于客户误用或者滥用造成的电芯质量问题，东磁不承担任何责任。

DMEGC will not be responsible for trouble occurred by against the precautions in instructions.

东磁公司对违反安全守则操作所产生的问题不承担任何责任。

DMEGC will not be responsible for trouble occurred by matching problems with electric circuit, cell pack and charger.

东磁公司对于电路，电池组以及充电器搭配使用所产生的问题不承担任何责任。

DMEGC will be exempt from warrantee any defect cells during assembling after acceptance.

东磁公司对于出货后客户在电芯组装过程中产生的不良电芯不予以质量保证。

### 9. Others 其他

#### 9.1. Storage for a long time 长期储存

If the cell is kept for a long time (3 months or longer), It is strongly recommended that the cell is preserved at dry and low-temperature ( -20~25°C ≤70%RH ).

假如电芯要存放3个月或更久，强烈建议将电芯保存在干燥、阴凉处 (≤70%RH、-20~25°C)。

#### 9.2. Others 其他

Any matter not included in that specification should be discussed and confirmed by both parties.

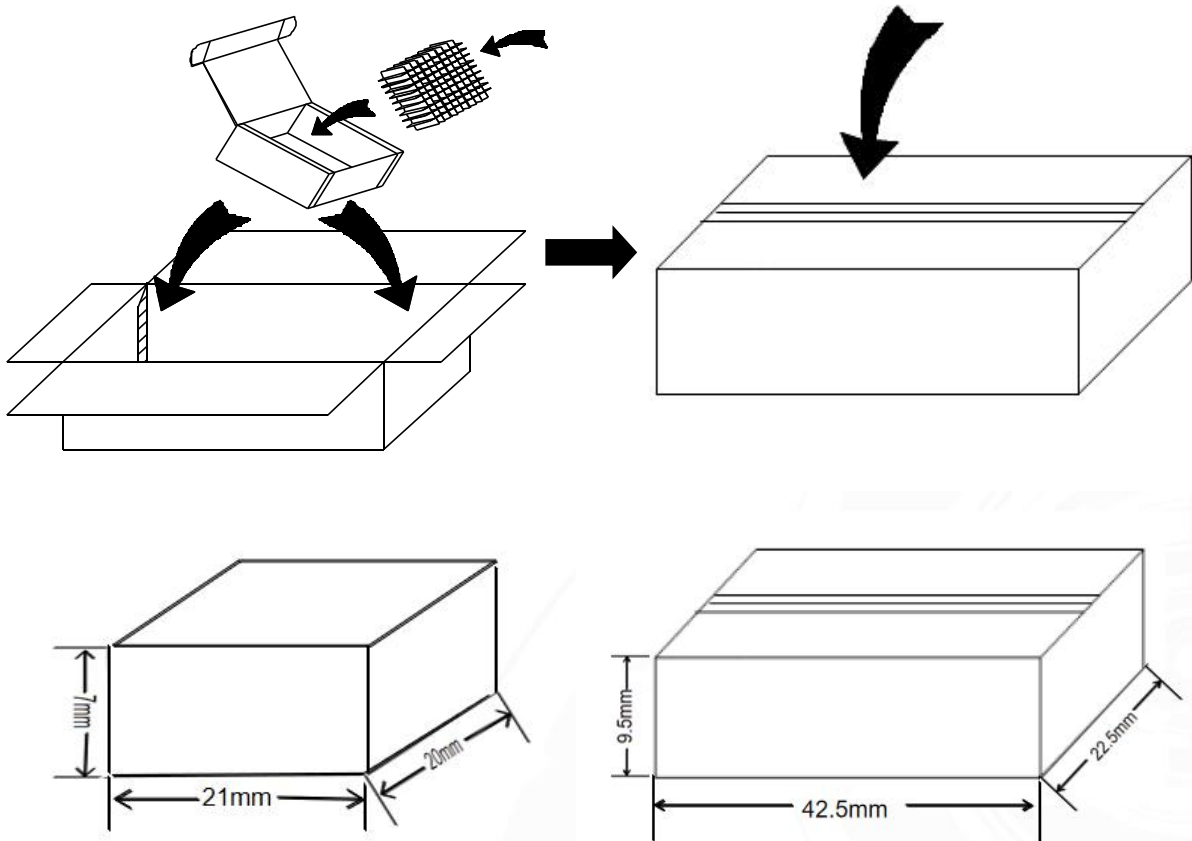
任何未包含在此产品规格书之内的问题，由双方协商解决。

### 10. Package 包装

100 cells per box, 2 boxes into a case, totally 200 cells. Sketch map refers to attached drawing 2

电芯包装每盒装 100 只电芯，每箱装 2 盒，共 200 只电芯，包装示意图见附图 2。

#### Attached drawing2 附图2







## **Handling precaution and prohibitions of lithium ion rechargeable cells and batteries**

### **锂离子电池的处理注意事项和禁止事项**

Inaccurate handling of lithium ion and lithium ion polymer rechargeable battery may cause leakage, heat, smoke, an explosion, or fire.

锂离子和锂离子聚合物电池处理不当可能导致泄漏、发热、烟雾、爆炸或火灾。

This could cause deterioration of performance or failure. Please be sure to follow instructions carefully.

这可能会导致性能下降或丧失。请务必仔细按照 说明操作。

### **Safety precaution and prohibitions 安全预防和禁止事项**

To assure product safety, describe the following precautions in the instruction manual of the application.

为确保产品安全，请在使用说明书中说明以下注意事项。

DMEGC will not undertake the warranty for the following abuse of the cell.

对于存在以下滥用现象的电芯，东磁不对其承担质保。

### **[Danger] 危险**

#### **Electrical misuse 电滥用**

Use dedicated charger.

使用专用充电器。

Use or charge the battery only in the dedicated application.

仅在专用应用程序中对电池进行使用或充电。

Don't charge the battery by an electric outlet directly or the other charger.

不要直接用插座或其他充电器给电池充电。

Don't charge the battery reversely.

不要给电池反向充电。

#### **Environmental misuse 环境滥用**

Don't leave the battery near the fire or a heated source.

不要把电池放在靠近火源或热源的地方。

Don't throw the battery into the fire.

不要把电池扔进火里。

Don't leave, charge or use the battery in a car or similar place where inside of temperature may be over 60°C.

不要在温度可能超过 60°C 的地方放置、充电或使用电池，如汽车内或类似的地方。

Don't immerse, throw, wet the battery in water / seawater.

请勿将电池浸没、抛掷、浸湿于水/海水中。

#### **Others 其它**

Don't fold the battery cased with laminated film such as pouch and Polymer.

不要用薄膜(如聚合物塑料袋)覆盖电芯。

Don't store the battery in a pocket or a bag together with metallic objects such as keys, necklaces, hairpins, coins, or screws.



不要将电池与钥匙、项链、发夹、硬币或螺丝等金属物品一起存放在口袋或袋子里。

Don't short circuit (+) and (-) terminals with metallic object intentionally.

不要故意将电池的正负极端子用金属物体连接。

Don't pierce the battery with a sharp object such as a needle, screw drivers.

不要用针、螺丝刀等锋利的物体刺穿电池。

Don't heat partial area of the battery with heated objects such as soldering iron.

不要用烙铁等加热物体加热电池。

Don't hit with heavy objects such as a hammer, weight.

不要用锤子等重物击打电池。

Don't step on the battery and throw or drop the battery on the hard floor to avoid mechanical shock.

请勿踩在电池上，将电池扔或摔在坚硬的地板上，以免造成机械冲击。

Don't disassemble the battery or modify the battery design including electric circuit.

请勿拆卸电池或修改电池设计，包括电路。

Don't use seriously scared or deformed battery.

不要使用严重损坏或变形的电池。

Don't put the battery into a microwave oven, dryer ,or high-pressure container.

不要将电池放入微波炉、烘干机或高压容器中。

Don't use or assemble the battery with other makers' batteries, different types and/or models of batteries such as dry batteries, nickel-metal hydride batteries, or nickel-cadmium batteries.

请勿将电池与其他制造商的电池、不同类型和/或型号的电池(如干电池、镍氢电池或镍镉电池)一起使用或组装。

Don't use or assemble old and new batteries together.

不要混合使用或组装新旧电池。

#### **[Warning] 警告**

Stop charging the battery if charging isn't completed within the specified time.

如果在规定时间内没有完成充电，请停止充电。

Stop using the battery if the battery becomes abnormally hot, order, discoloration, deformation, or abnormal conditions is detected during use, charge, or storage.

如果在使用、充电或储存过程中发现电池出现异常发热、变色、变形或异常情况，请停止使用电池。

Keep away from fire immediately when leakage or foul odors are detected. If liquid leaks onto your skin or cloths, wash well with fresh water immediately.

如发现泄漏或异味，应立即远离火源。如果液体泄漏到皮肤或衣物上，立即用清水冲洗干净。

If liquid leaking from the battery gets into your eyes, don't rub your eyes and wash them with clean water and go to see a doctor immediately.

如果电池漏液进入眼睛，不要揉搓眼睛，应用清水洗净并立即前往医院治疗。

If the terminals of the battery become dirty, wipe with a dry cloth before using the battery.

如果电池的正负极端子变脏，使用前用干布擦拭。

Cover terminals with proper insulating tape before disposal.

处理电池前应先用合适的绝缘胶带覆盖正负极端子。

### [ Caution! ] 谨慎操作

#### Electrical misuse 电滥用

Charge current must be controlled by specified value in Cell specification.

充电电流必须控制在电芯规格书中指定的值以内。

When the ambient temperature is higher than 40°C, charging greater than 0.5c will affect the cell cycle.

当环境温度高于 40°C 时，大于 0.5C 充电会对电芯循环造成影响。

When the ambient temperature is lower than 15°C, charging greater than 0.2c will affect the cell cycle.

当环境温度低于 15°C 时，大于 0.2C 充电会对电芯循环造成影响。

Cut-off voltage of charging must be less than 4.2V, otherwise, it will affect the electrical and safety performance of the cell.

充电截止电压不得超过 4.2V，否则会对电芯的电性能与安全性能造成影响。

Charger must stop charging battery by detecting either charging time or current specified in Cell's specification.

当达到电芯规格中指定的充电时间或电流时，充电器必须停止充电。

Discharge current must be controlled by specified value in Cell's specification.

放电电流必须控制在电芯规格书中指定的值以内。

Cut-off voltage of discharging must be above 2.5V, otherwise, it will affect the electrical and safety performance of the cell.

放电截止电压不得低于 2.5V，否则会对电芯的电性能与安全性能造成影响。

The cell should be used within the specified temperature range, beyond which the electrical and safety properties of the cell will be affected

电芯需在规定的温度范围内使用，超出使用温度范围会影响电芯的电性能与安全性能

#### Others 其它

The cell should be stored in a dry area and no corrosive gas.

电芯应在干燥无腐蚀性气体的环境下储存。

No press on the cell.

不要让电芯承受任何压力。

Storage temperature 储存温度要求

When stored within 1 month : -20°C ~ +60°C

储存期 1 个月 : -20°C ~ +60°C

When stored within 3 months: -20°C ~ +45°C

储存期 3 个月 : -20°C ~ +45°C

When stored within 12 months : -20°C ~ +25°C

储存期 12 个月: -20°C ~ +25°C



After the cell assembled in pack, the pack should be recharged to 40% SOC if the pack has never been used for one year, this will avoid the cell voltage drop too low.

电芯组装后，若电池包超过 1 年未能使用，须将电池充电到约 40% 荷电态，以避免电池电压降的过低。

Keep the battery away from babies and children to avoid any accidents such as swallow.

电池远离婴幼儿，避免发生吞咽等意外。

If younger children use the battery, their guardians should explain the proper handling method and precaution before using.

如儿童使用电池，其监护人应在使用前说明正确使用方法及注意事项。

Before using the battery, be sure to read the user's manual and precaution of it's handling.

在使用电池前，请务必阅读使用说明书及注意事项。

Before using charger, be sure to read the user's manual of the charger.

在使用充电器前，请务必阅读充电器使用说明书。

Replace the battery when using time of battery becomes much shorter than usual.

当电池的使用时间比以往短很多时，请及时更换电池。

Cover terminals with insulating tape before proper disposal.

在处理电池前先用绝缘胶带覆盖电池的正负极端子。

While the battery is charged, used and stored, keep it away from object materials with static electric charges.

电池在充电、使用和储存过程中，应远离会产生静电的物体。

### Precautions on Battery Pack Design. 电池包设计预防措施

Do not make the shape and mechanism which static electricity and water easy go through the battery pack inside.

终端外形与构造设计需能够有效阻止静电及水进入电池包内部。

Overcharge protection should work below 4.2V/cell by charge. Then charge current shall be shut down.

过充保护能够确保电芯充电电压低于 4.2V，若电芯电压高于 4.2V，则停止充电。

Within a voltage range of 2.5V/cell, over-discharge protection should work. Then discharge current shall be shut down and consumption current is below 1 $\mu$ A.

过放保护能够在电芯电压达到 2.5V 时停止放电且漏电流需小于 1 $\mu$ A。

When discharge current exceeds 60A, over-discharge current protection should work. Then over discharge current shall be shut down.

电芯放电电流超过 60A 时，过流保护作用并停止放电。

To avoid discharging during storage, design the low consumption current electronic circuit (e.g. Protection circuit, fuel gauge, etc) inside battery pack.

电池包电路设计低漏电流（例如保护电路，电量监控等）以避免电芯储存过程被放电。

### Battery Pack Assembly 电池组组装

Prohibition of usage of damaged cell. Do not use abnormal cell which has been damaged by shipping stress, drop, short, twice spot or something else, and which gives off electrolyte odor.

禁止使用受损电芯。不要使用由于运输损伤、跌落、短路、二次点焊或其它原因造成破损或漏液电芯。

The cell should be inspected visually before battery assembly.

电池组装前检查电池外包装。



Inspect voltage and internal impedance before using.

使用前需检测电芯电压及内阻。

Do not solder onto a cell in order to avoid damage on the cell. Weld spot welding lead plate onto cell, and solder lead wire or lead plate.

不可对电池直接进行锡焊以避免对电芯造成损伤，电池包组装使用点焊方式在电芯上连接导线及线路板。

The battery assembly must pay attention to anti-static, Avoid electronic components damaged by electrostatic.

电池组装须注意防静电，避免电子元件损伤。

Battery assembly should pay attention to prevent the short circuit.

电池组装时须注意防止短路。

## **Safety handling procedure for the transporter**

### **运输安全操作规程**

#### **Quarantine 检疫**

Packages that are crushed, punctured or torn open to reveal contents should not be transported. Such packages should be isolated until the shipper has been consulted, provided instructions and, if appropriate, arranged to have the product inspected and repacked.

包装被压坏、刺破或撕开查看的，不得运输。在咨询发货人提供指示并在适当情况下安排对产品进行检查和重新包装之前，此类包装应予以隔离。

#### **Spilled Product 漏液产品**

In the event that damage to packaging results in the release of cells or batteries, the spilled products should be promptly collected and segregated and the shipper should be contacted for instructions.

如果包装破损导致电芯或电池漏液的，应及时收集和隔离漏液的产品，并与发货人联系以获得指示。

## **Design of positioning the battery pack in application and charger**

### **电池组在应用和充电保护设计**

To prevent the deterioration of the battery performance caused by heat, battery shall be positioned away from the area where heat is generated in the application and the charger.

为防止高温对电池性能的影响，电池在应用和充电过程中应远离产生热量的区域。

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