

# PIOTR WANG POWER TRADING CO.,LTD

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## SPECIFICATION OF PRODUCT

Cylindrical Lithium-ion Rechargeable Cell

### 圆柱锂离子电芯规格书

Model : QB26800

电芯型号 : QB26800

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## 1. Scope 适用范围

This specification describes the type and size, performance, technical characteristics, warning and caution of the lithium ion rechargeable cell. The specification only applies to QB26800 cell supplied by PIOTR WANG POWER TRADING CO.,LTD

本规格书规定了皮特王能源贸易有限公司生产的型号为 QB26800 锂离子二次电芯的技术要求和测试方法及注意事项。

## 2. Description and model 说明及型号

2.1 **Description** 产品名称: Cylindrical Li-ion rechargeable cell 圆柱锂离子二次电芯

2.2 **Model** 电芯型号: QB26800

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## 3. Nominal Specifications 基本规格参数

Item 项目	Characters 参数	Remark 备注
Model 型号	QB26800	
Nominal Capacity 标称容量	6800mAh	At 1C discharge, 25±2 °C 25±2 °C 1C <sub>n</sub> 放电
Minimum Capacity 最小容量	6800mAh	
Nominal Voltage 标称电压	3.60V	
Standard Charge Profile 标准充电	Constant current 1C <sub>n</sub> , Constant voltage 4.20V, Cut-off current 1/20C <sub>n</sub> , charge time is less than 2 hour. 1C 恒流充电恒压至 4.20V, 截止电流为 0.05C, 充电时间不大	C <sub>n</sub> , nominal capacity C <sub>n</sub> 为标称容量
Max. Charge Profile 最大充电电流	0°C~10°C Charge current 1C <sub>n</sub> 10°C~45°C Charge current 2C <sub>n</sub> 0°C~10°C 充电 1C <sub>n</sub>	
Standard Discharge Profile 标准放电	Constant current 1C <sub>n</sub> , cut-offvoltage 3.0V 1C <sub>n</sub> 恒流放电至 3.0V	
Max. Continuous Discharge Current 最大持续放电电流	3C <sub>n</sub>	25±2 °C
Max.Pulse Discharge Current 最大瞬时放电	5C <sub>n</sub>	25±2 °C, time less than 30s 25±2 °C, 时间小于 30s
Internal Impedance 交流电阻	≤10mΩ	AC 1kHz 交流频率 1kHz
Cycle Life 循环寿命	25±2 °C ,100%DOD , 1C <sub>n</sub> charge/1C <sub>n</sub> discharge 500 <sup>th</sup> cycle ≥ 90% of 1 <sup>st</sup> cycle capacity 0.5C <sub>n</sub> charge/0.5C <sub>n</sub> discharge 1500 <sup>th</sup> cycle ≥ 80% of 1 <sup>st</sup> cycle capacity 25±2 °C, 1C <sub>n</sub> 100%DOD 充放电 500 周容量保持率≥ 90%	

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	容量保持率≥ 80%	
Discharge Characteristics R 放电性能	$1C_n = 100\%$ $2C_n \geq 100\%$ $3C_n \geq 98\%$ $5C_n \geq 90\%$	Cell shall be charged per standard charge profile. The discharge capacity of each cell at respective discharge rate shall be compared with the discharge capacity at $1C_n$ 标准充电后按照不同放电
Charge Rate Characteristics 倍率充电性能	$1C_n = 100\%$ $2C_n \geq 90\%$ $3C_n \geq 80\%$ $5C_n \geq 70\%$	The discharge capacity by $1C_n$ of each cell at respective charge rate shall be compared with the discharge capacity by $1C_n$ at $1C_n$ charge rate. 不同充电倍率时 $1C_n$ 放电容
Temperature Characteristics 不同温度放电性能	$25 \pm 2^\circ\text{C}, 1C_n = 100\%$ $55 \pm 2^\circ\text{C}, 1C_n \geq 96\%$ $-20 \pm 2^\circ\text{C}, 1C_n \geq 75\%$	Discharge under constant current $1C_n$ , cut-off voltage 2.75V $1C_n$ 恒流放电至 2.75V
Room Temperature Storage Characteristics 常温存储性能	$\geq 98\%$	$25 \pm 2^\circ\text{C}$ , 100%SOC, capacity retention after 28 days $25 \pm 2^\circ\text{C}$ 28 天满电电芯容量保
High Temperature Storage Characteristics 高温存储性能	$\geq 95\%$	$55 \pm 2^\circ\text{C}$ , 100%SOC, capacity retention after 7 days $55 \pm 2^\circ\text{C}$ 7 天满电电芯容量
Operating Temperature 使用温度	Charge 充电: $0 \sim 45^\circ\text{C}$ Discharge 放电: $-20 \sim 60$	
Storage and Transportation Temperature 存储和运	1month 1 个月: $-20 \sim 55^\circ\text{C}$ 3month 3 个月: $-20 \sim 45^\circ\text{C}$ 12months 12 个月: $-20 \sim 30^\circ\text{C}$	Recommend storage temperature $-10 \sim 25^\circ\text{C}$ 建
Humidity 湿度	45%~85%	
Heat-shrinkable Tubing Material	PET	
Heat-shrinkable Tubing Color	Gray 灰色	
Weight 重量	$121 \pm 3\text{g}$	

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Max. Outline Dimension (D*H) mm 最大外形尺寸	26.75(±0.05) × 80.6(±0.5)	
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## 4. Appearance 外观

There shall be no such defect as deep scratch, flaw, crack, rust, leakage, which may adversely affect commercial value of the cell. 电芯外观不存在明显的刮痕、凹坑、裂痕、锈蚀、漏液等影响电芯性能的外观不良。

## 5. Standard Test Conditions 标准测试条件

### 5.1 Environmental Conditions 环境测试条件

Unless otherwise specified, all tests stated in this specification are conducted at temperature  $25\pm 5^{\circ}\text{C}$  and humidity  $65\pm 20\%$ . 若无特别要求，此规格书上的产品测试条件均为温度  $25\pm 5^{\circ}\text{C}$ ，湿度  $65\pm 20\%\text{RH}$ 。

### 5.2 Measuring Equipment 测试设备要求

#### (1) Ammeter and Voltmeter 伏特计和安培表

The ammeter and voltmeter should have an accuracy of the grade 0.5 or higher.  
安培表和伏特计的精度不低于 0.5 级。

#### (2) Slide Caliper 游标卡尺

The slide caliper should have 0.05mm scale.  
游标卡尺的精度为 0.05mm。

#### (3) Impedance meter 内阻测试仪

The impedance meter with AC 1kHz should be used.  
内阻测试仪的交流频率为 1kHz。

## 6. Mechanical Characteristics 机械性能

Test Item 测试项目	Test method 测试方法	Criteria 检验标准
Free drop	After standard fully charge, cell drop onto a	Nofire,

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自由跌落	floor from 1.5m height at the positive and negative terminals side, observe 1 hour. 电芯标准充电后，正负端子一侧向下，从 1.5m 高度的位置自由跌落到水泥地面，观察 1h。	explosion, no leakage 不起火，不爆炸，
Vibration 振动测试	Discharge at 0.3C <sub>n</sub> , cell shall be attached to vibration table directly, subjected to up and down the one-way vibration that consists of 10 Hz to 55 Hz at the maximum accelerated speed of 30m/s <sup>2</sup> , sweep 10 cycles during 3 hours. 电芯固定在实验台上，以 0.3C <sub>n</sub> 放电，上下单向振动，振动频率为 10Hz~55Hz，最大加速度为 30m/s <sup>2</sup> ，扫频循环 10 次，时间为 3 小时。	No current sharp change and abnormal voltage, no broken shell, no leakage 无电流锐变和电

压异常，无外

## 7. Safety Characteristics 安全性能

Test Item 测试项目	Test method 测试方法	Criteria 检验标准
Heating 热冲击 (130℃ 30min)	The cell is charged following the standard charge method. After charging the cell is put in the oven. And then the oven temperature will be ramped at 5℃ per minute to 130℃. When the temperature of the cell reach 130℃, the cell is maintained in the 130℃ oven for a maximum of 30 minute, stop heating and observe 1 hour.	No fire, no explosion 不起火，不爆炸
Overcharge 过充 (1C6.3V)	The cell is charge following the standard charge method, continue charge at 1C <sub>n</sub> current to 6.3V, observe 1 hour. 电芯按照标准充电方法充满电后，继续以 1C <sub>n</sub> 恒流充电至	No fire, no explosion 不起火
Over discharge 过放	Cell shall first be charged according to standard charge method, and then cell is to be discharge by 1.0C <sub>n</sub> current for 90 min, observe 1 hour. 电芯按照标准充电方法充满电后，以 1.0C <sub>n</sub> 恒流放电 90min，观察 1 小时。	No fire, no explosion, no leakage 不起火
External short circuit 短路	The cell is charge following the standard charge method, and then cell is to be short-circuit 10min by connecting the positive and negative terminals of the cell with copper wire having a maximum resistance load of 5 mΩ, observe 1 hour. 电芯按照标准充电方法充满电后，将电芯正负极端子外部短路 10min，外部线路电阻小于 5mΩ，观察 1h	No fire, no explosion 不起火，不爆炸

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<p>Crush 挤压</p>	<p>The cell is charge following the standard charge method, and the cell is to be crushed by the following method, and then observe 1 hour.</p> <p>Direction of crush: perpendicular to the direction of the cell electrode;</p> <p>Shape of the crush plate: half the cylinder radius of 75mm, length is bigger than the size of cell;</p> <p>Speed of crush: (5±1)mm/s;</p> <p>The degree of crush: voltage is 0V, or the deformation is 30%, or the crush force is 200KN. 电芯按照标准充电方法充满电后，按照下列方法进行挤压测试，观察 1 小时。挤压方向：垂直于电芯极片方向；</p> <p>挤压板形状：半径 75mm 的半圆柱体，长度大于电芯尺寸；</p> <p>挤压速度：(5±1)mm/s;</p> <p>挤压程度：电压达到 0V 或型变量达到 30%或挤压力达到 200KN。</p>	<p>No fire, no explosion 不起火，不爆炸</p>
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## 8. Warning 注意事项

- Stop charging the cell if charging isn't completed within the specified time.  
在规定时间内还没有充满电时停止充电。
- Don't use the unspecified charge and breach charging requirement. Cell charged with unspecified condition maybe lead cell to be overcharged or abnormal chemical reaction. It



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causes the generating heat, smoke, rupture or flame. 不要使用非规定充电设备和违反充电要求。非规定条件充电会引发电芯过充电或异常化学反应，发生产热，冒烟，破裂或起火情况。

- Don't use or leave the cell under the blazing sun (or in heated car by sunshine), and keep cell away from little children in order to avoid troubles by swallowing. In case of swallowing the cell, see a doctor immediately.

不要将电芯放置在太阳光直射的地方（或者阳光直接照射的车内），电芯要远离儿童放置以避免儿童吞咽事故，如发生吞咽情况，请立即就医。

- Don't use or expose the cell to extreme heat disposed in fire or water or get it wet. Don't modify or disassemble the cell. It will be dangerous, and may cause ignition, heating, leakage or explosion.

切勿将电芯加热或投入火中或水中。不要更改或解剖电芯。否则会导致危险，如起火，发热，漏液甚至是爆炸。

- Don't short-circuit cell positive (+) and negative (-) terminals. Keep away from metal or other conductive materials. Jumbling the cells of direct contact with positive (+) and negative (-) terminals or other conductive materials may cause short-circuit. Don't reverse the positive (+) and negative (-) terminals for any reason.

切勿短接电芯正极(+)和负极(-)，使电芯远离金属或其他导电材料。处理不好电芯正极(+)和负极(-)以及和金属或其他导电材料的直接接触会导致电芯短路，切勿反接电芯的正极(+)和负极(-)。

- If the cell gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during usage, recharging or storage, immediately remove it from the device or cell charger and stop using it.

当电芯在使用、充电及存储时发生放气、发热、变色或其他不正常现象，立即从夹具或充电器卸除，电芯停止使用。

- Don't directly solder the cell. Excessive heating may cause deformation of the cell components such as the gasket, which may lead to the cell swelling, leakage, explosion, or ignition.

勿直接焊接电芯，过多的热量会导致电芯组件如绝缘件变形，进而导致电芯膨胀、

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漏液、起火和爆炸。

- Don't use abnormal cell which has damages by shipping stress, drop or something else, and which gives off electrolyte odor. 切勿使用在运输压力、跌落、短路或其他情况下损坏的电芯，以及释放出电解液气

味的电芯。