



# 广东力王新能源股份有限公司

Guangdong Liwang New Energy Co., Ltd

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## SPECIFICATION FOR LR20 ALKALINE BATTERY

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制 作(Prepared By): 王李晶  
核 准 ( Approved by): 殷世抒  
客户名称(Customer Name): Powerhouse  
客 户 (Client server): \_\_\_\_\_  
客户确认(Confirmation approved): \_\_\_\_\_

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广东力王新能源股份有限公司

**Guangdong Liwang New Energy Co.,Ltd**

地址(Add): 广东省东莞市塘厦镇石马力王工业园

Liwang Industrial Estate, Shima Village ,Tangxia Town, DongGuan  
City,GuangDong Province, CHINA

电话(Tell): 0769-87888653 87885755 86201111

传真(Fax): 0769-87887512

电邮(E-mail): Liwang@Liwangbattery.com

网址(Web site): <http://www.Liwangbattery.com>

## 1 · 概述 *Summary*

这规格书适用于广东力王新能源股份有限公司 LR20 产品。

This specification defines the Technology for high Capacity Alkaline cells LR20.

### 1.1 型号 Type

IEC : LR20      Other : D      JIS : AM-1      ANSI:13A

### 1.2 参考标准 Reference standard

IEC 60086-1 --- Primary Batteries - Part 1: General

IEC 60086-2 --- Primary Batteries - Part 2: Physical and electrical specification

### 1.3 执行标准 Execution standard

GB/T 8897.2

## 2 · 电化学体系 Chemistry composition

锌/氢氧化钾/电解二氧化锰 。 Zinc ,EMD , Potassium hydroxide, Graphite

不添加水银和镉                      0.00% Mercury & Cadmium

## 3. 标称电压 Rating voltage                      : 1.5V

## 4. 平均重量 Average weight                      : 142g

## 5. 标称容量 Nominal Capacity

**15000mAh** (条件: 10Ω 负载, 每天放电 4 小时, 终止电压 0.9V , 放电环境: 20+/-2° C)

**15000mAh** (condition: 10Ω load resistance, discharge 4 hours per day at 20+/-2°C, end-point voltage 0.9V )

## 6. 电性能 Electrical performance

(测试条件: 负载电阻 ( ±0.5%) 3.9Ω , 测试时间: 0.3秒, 温度: 20±2°C。 )

( Test condition : Load Resistance ( ±0.5%) 3.9Ω, Time: 0.3s, Temperature: 20±2°C。 )

|   | O.C.V<br>(V) | C.C.V<br>(V) | 接收水平                         |
|---|--------------|--------------|------------------------------|
| 新电池 (交货 30 天内)      ≤ 30 days after delivery        | 1.58         | 1.45         | MIL-STD105E ,<br>AQL(II)=0.4 |
| 45°C 储存 3 个月                      45°C for 3 months | 1.55         | 1.40         |                              |
| 常温储存 12 个      Normal temperature for 12<br>Months  | 1.55         | 1.40         |                              |

## 7 · 放电性能 Service Life

(测试环境: 温度: 20±2°C 相对湿度 60±15%RH)

( Test condition: 20°C±2°C and 60±15%RH)

| 项目 ITEM              | 放电条件 (Discharge Method)    |              |                               | 最小平均放电时间 (Minimum Average Duration)   |  |  |
|----------------------|----------------------------|--------------|-------------------------------|---------------------------------------|--|--|
|                      | 放电负载<br>Load<br>Resistance | 放电方式<br>Time | 终止电压<br>Cutoff<br>Voltage (V) | 新电池<br>≤ 30 days<br>after<br>delivery | 45° C 储存3<br>个月后<br>45°C for 3<br>months | 室温储存12个月后<br>Normal Temperature<br>for 12 Months |
| IEC 项目<br>(IEC ITEM) | 10Ω                        | 4 h/d        | 0.9V                          | 120 h                                 | 110h                                     | 110 h  |
|                      | 3.9Ω                       | 1 h/d        | 0.8V                          | 40h                                   | 37 h                                     | 37h  |
|                      | 2.2Ω                       | 4m/1h,8 h/d  | 0.9                           | 22h                                   | 20 h                                     | 20h  |
|                      | 600mA                      | 2 h/d        | 0.9                           | 17h                                   | 15 h                                     | 15h  |

### 验收方法 Inspection Method/Satisfaction Standard:

- 1) 每一交货批, 每一放电项目, 抽 9 个电池作放电测试,  
9 pieces of battery will be tested for each discharging standard.
- 2) 放电平均结果大于或等于最小平均放电时间, 且个体放电时间低于最小平均值的 80% 的电池个数不大于 1, 则批次电池容量测试为合格。

The result of the Minimum Average Duration from each discharging standard shall be equal to or more than the Minimum Average Duration requirement; and no more than one battery has a service output less than 80% of the specified requirement.

- 3) 如果第一次测试不合格, 则须重新抽样测试, 重测结果合格, 则整批货为合格。  
One re-test is allowed to confirm the previous result.

### 8 · 耐漏性能 Leakage Resistance

| 项目 Item   | 条件 Condition  | 测试时长<br>Test Duration           | 结果<br>Result   | 接收水平<br>Accept Level |
|---|---|---------------------------------|--|----------------------|
| 过放电测试<br>Over Discharge<br>Test                     | 在 20 °C ±2 °C 和<br>60±15%RH 的环境下,<br>用 10 Ω 电阻连续放电<br>Test condition: +20°C±2°C<br>and 60±15%RH<br>Load Resistor: 10Ω<br>Time:24h/d | 连续放电 48 小<br>时<br>Discharge 48h | 电池的形变不能超<br>过尺寸规格值的上<br>限及不能发生肉眼<br>可辨别的漏液现象<br>There shall be no<br>deformation<br>exceeding the<br>specified dimensions,<br>nor leakage<br>recognized by human<br>eye。 | N=30 ,<br>Ac=1,Re=2  |
| 恒温恒湿测试<br>High heat and<br>humidity storage<br>test | 60 ±2°C 相对湿度低于<br>90% RH<br>60 ±2°C Low 90% RH  | 30 天<br>30days                  |  | N=30 ,<br>Ac=1,Re=2  |

### 9. 安全性/可靠性 Safety performance

| 项目 ITEM                     | 条件 CONDITIONS  | 要求 REQUEST     |
|-----------------------------|--|----------------|
| 自由跌落<br>Drop test           | 从 1m 高度跌落, 6 次 放置 1h<br>Free drop from 1m height to floor for 6 times,keeping for 1 hour   | 无爆炸 no explore |
| 外部短路<br>External shorting   | 用 0.1 $\Omega$ 电阻连续放电 24h 或者电池外壳温度降至室温 short positive and negative terminals with 0.1 $\Omega$ resistor for 24 hours or battery temperature drop to room temperature | 无爆炸 no explore |
| 不正确安装<br>Wrong Installation | 4 个相同型号电池串联, 其中 1 个反接<br>4 batteries connect in series with 1 battery reversed,until the reversed battery leak or OCV drop to nearly 0V.                             | 无爆炸 no explore |
| 过放电<br>Over discharge       | 1 个已放电电池与 3 个未放电电池串联直到总电压降至 2.4v<br>Connect 3 new batteries and 1 discharged battery in series,until the whole voltage drop to 2.4V.                                 | 无爆炸 no explore |

## 10. 标识 Marking

标签上印有以下内容 The label printing:

- (1) 型号 Type: LR20
- (2) 注册商标 Brand: Kendal
- (3) 标称电压 Normal : 1.5V
- (4) 电池极向 Polarity: “+” or “-”
- (5) 警告字眼 Warning: Battery may explode or leak if recharged or disposed of in fire.

## 11. 使用注意事项 Caution for use:

- (1) 碱性锌锰电池是不可充电的, 如果对电池充电有可能发生漏液和爆炸的危险。

Since the battery is not manufactured for recharging, there are risks of electrolyte leakage or causing damage to the device if the battery is charged.

- (2) 请按+/-极的标示, 正确安装电池。

The battery shall be installed with its "+" and "-" polarity in correct position, otherwise may cause short-circuit

- (3) 禁止对电池短路、加热、投入火中或试图拆解电池。

Short-circuiting, heating, disposing of into fire and disassembling the battery are prohibited.

- (4) 不要对电池过度放电, 这会引起电池泄漏而损坏用电器具。

Battery cannot be forced discharged, which lead to excess gassing and, may result in bulging,Leakage and de-crimping of cap.

- (5) 新旧电池, 不同型号或品牌的电池, 不能同时使用。如果更换电池时, 请确认使用同一品牌且全部更换。

New and used batteries cannot be used at the same time, when replaced batteries recommend to replace all and with the same brand type.

- (6) 用完的电池请及时更换，以防止电池过度放电。否则有可能引起电池泄漏而损坏用电器具。

Exhausted batteries should be removed from compartment to prevent over-discharge, which Cause leakage damage to the device.

- (7) 禁止直接在电池上焊接，这样有可能损坏电池。

Direct soldering is not allowed, which will damage the battery

- (8) 电池应放在儿童不可触及的地方，以防止儿童误吞。如果儿童误吞，请立即联系医生。

Battery should be kept out of the reach of children to prevent swallow, in case of accident should contact physician at once.

## 11 · 保质期 Period of validity: 5年

5 years after delivery under proper storage conditions.

(在温度 $20\pm 2^{\circ}\text{C}$ ，相对湿度 $65\pm 20\%RH$ 条件下)

(Temperature:  $20\pm 2^{\circ}\text{C}$ ; Relative humidity:  $65\pm 20\%RH$ )

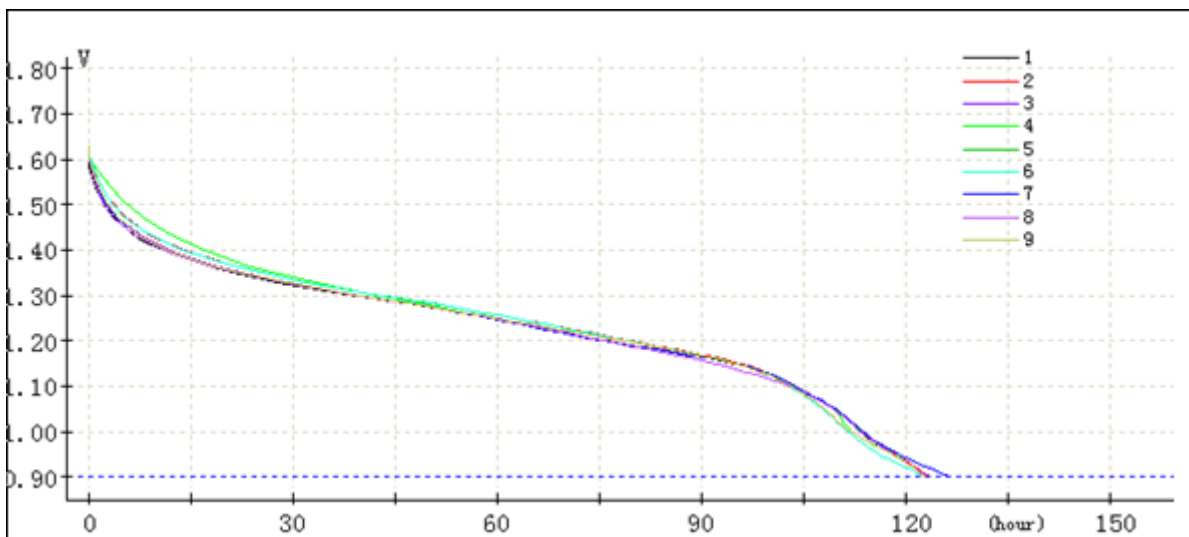
## 12 · 放电曲线 Discharge curve

LR20 放电曲线 DISCHARGE CURVE

电阻:  $10\ \Omega$ ; 每天放电4小时，环境温度:  $20\pm 2^{\circ}\text{C}$

Discharge Method:  $10\ \Omega$  Period: 4 h/d Temperature:  $20\pm 2^{\circ}\text{C}$

电压 (V) Terminal Voltage (V)



13 · 尺寸Dimensions

