

产品规格书

Product specification

产品描述 Product description	碳性锌锰干电池 Zinc-manganese dioxide battery
产品名称 Product name	碳性 7 号干电池 R03 (AAA)
产品代码 Product code	LONLIFE 2049
制造商 Manufacturer	东莞市凌力电池有限公司 Dongguan Lingli Battery Co.,Ltd
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凌力确认 Lingli confirm	编辑 The editor: <u>袁锦展</u> 日期 Date: <u>2022.5.17</u> 批准 Approver: <u>李凤梅</u> 日期 Date: <u>2022.5.17</u>
客户确认 Customer confirm	签收 Received by: _____ 日期 Date: _____ 批准 Approver: _____ 日期 Date: _____

1、范围 Scope:

1.1 本文件的目的是详细说明凌力公司生产的 R03 7 号锌锰电池的质量要求。

This specification defines the quality requirement for R03 zinc-manganese battery produced by LingLi Battery Co., Ltd.

2、参考文献 Reference document:

2.1 IEC 60086-1、IEC 60086-2、IEC 60086-5、GB2828.1

2.2 IEC 600410 计数抽样检验的设计和程序 Design and procedure of counting sampling inspection.

3、电池类型和级别 Battery type and level:

3.1 电池类型 battery type:

TYPE	IEC	ANSI	JIS	NEDA
R03	R03	AAA	UM4	24D

3.2 标称电压 Nominal Voltage: 1.5V

3.3 近似重量 Approximate weight: 7.50 g

3.4 化学构成 Chemical Ingredient: 电解二氧化锰（正极）MnO₂ (positive)

锌壳（负极）Zinc shell (negative)

氯化锌（电解液）ZnCl₂ (electrolyte)

3.5 使用温度 Operating temperature: -10~45°C

3.6 储存条件 Storage conditions: 5~30 °C、HR40%-80%.

3.7 标称容量 Nominal capacity: 350mAh

放电模式: 负载 75 欧姆电阻, 每天放 4 小时, 截至电压 0.9V

Discharging conditions: loading 75ohm for 4h per day, end point voltage 0.9V

4、物理特性 physical characteristics:

4.1 尺寸 Dimension:

尺寸要求来自 IEC 版 60086-2, 除非在相关附录上有其它说明。

Dimension requirement refer to IEC 60086-2, unless otherwise specified in the relevant appendix.

4.2 外观 Appearance:

产品应当避免有边角、划痕、腐蚀、污染或变形, 否则会影响使用和销售。电池负极包商标时应包好, 不留沟槽, 避免电池在使用中短路。

Products should be avoided with the edge angle, scratches, corrosion, pollution or deformation; otherwise it will affect use and sales. The battery negative package should be wrapped up without any grooves, so that the battery will not be short circuited

4.3 有效日期识别 period of validity:

电池的有效期（有效期为 2 年）适用凌力公司的日期编码。

Valid for 2years, applicable Lingli company's date encoding.

4.3.1 电池底唛面前两位阿拉伯数字指明月份, 后四位阿拉伯数字指明年份。(如一个电池在 2015

年 7 月生产有效期编码为：07-2017)

For export product, the first two digits in Arabia in the month, after the four figures indicate the year (for example , a battery produce in July 2015 , its effective encoding should be 07-2017)

5、电性能 Electric properties:

5.1 环境条件 environment condition:

所有放电测试（如下文所示的次序）应在如下条件下进行：温度为 20 ± 2 度，相应的湿度应在 35%到 75%之间。在上述条件下测试最短时间为 24 小时。

All discharge tests (as shown below) shall be carried out in the following conditions: temp $20 \pm 2^{\circ}\text{C}$, relative humidity 35%~75%, test the shortest time 24hours.

5.2 开路电压 open circuit voltage:

开路电压应在 5.1 规定的条件下测试。使用内阻大于 1 兆欧的电压表测量开路电压，电压应在指定的数值内。
Open circuit voltage test should be carried out according to 5.1 descriptions, use the voltmeter internal resistance more than $1\text{M}\Omega$ to measure the open circuit voltage, test result should be within the specified value.

初始电压 initial voltage	生产后 12 个月 12months after production
$\geq 1.60\text{ V}$	$\geq 1.50\text{V}$

5.3 负载电压 Load voltage:

5.3.1 负载电压的测试要在 5.1 规定的条件下进行。负载电压的测试应当在 2 ± 0.2 秒内完成。

Load voltage test should be carried out according to 5.1 descriptions, and the test time should be within 2 ± 0.2 second.

5.3.2 负载电阻（包括外电路的所有部分）要在规定参数的 0.5%内。

Load resistance (including all parts of the outer circuit) shall be within 0.5% of the specified parameters.

初始电压 initial voltage	生产后 12 个月 12months after production
$\geq 1.40\text{V}$	$\geq 1.35\text{V}$

负载电阻 Load resistance: 3.9Ω

6、使用寿命 Service life:

6.1 为了测定使用寿命，电池应当在 5.1 指定的条件下，通过一个固定的、有耐力的装载放电，直到负载电压负荷到指定的属性。

Service life test should according to 5.1 specified conditions: the battery should be discharged at a fixed and endurance load until the load voltage loads to the specified property.

6.2 放电测试的样本大小应当符合 IEC 版 60086-1 和 GB/T8897.2 的要求。

The samples for discharge test size shall be met the requirements of IEC 60086-1& GB/T8897.2

6.3 放电负载电阻、最小平均放电时间和终止电压应当符合附录上指定的要求。

The load resistance for discharge, the MAD discharge time and the end point voltage shall be met with the requirements specified in the appendix.

6.4 放电性能 discharge performance:

放电条件 Discharge condition	新电池最小平均放电时间 The MAD discharge time with the fresh battery	12 个月 12months
5.1Ω ,4min/h ,8h/d ,Epv0.9 V	60 mins	≥85%
10Ω, 1h/d ,Epv0.8 V	2.0 hours	≥85%
3.9Ω, 24h/d, Epv0.9V (rapid discharge 快速放电)	35 mins	≥85%

7、防漏性能 Leak resistance:

7.1 在正常条件下储存的将要交货的电池，在保质期内不能有漏液现象。

The delivered battery should not leakage during period of validity.

7.2 进一步的防漏测试要符合凌力公司和客户的要求。

The leakage test should be met the requirements of Lingli company and customer.

8、安全性能 Safety requirement:

8.1 据 IEC 版 60086-5 的要求，当电池在部分使用后贮存、运输过程中受到冲击、振动时不爆炸、不着火、不泄漏。

According to the requirement of IEC 60086-5, the battery should be no explode, no fire, no leakage during the process of storage and transport.

8.2 据 IEC 版 60086-5 的要求, 电池在使用过程中有不正确安装，电池过放电，以及电池外部短路时不爆炸、不着火。

According to the requirement of IEC 60086-5, the battery should be no explode, no fire during the wrong installed, or over discharge, or external short circuit

9、标签 Label:

电池的外观设计和包装要符合标准。商标上至少应当包括以下几项：

The design of the battery appearance and packing should be met the standard, below item should be marked on the battery label.

- | | |
|------------------|------------------------|
| (1) 型号 R03 | Battery Model R03 |
| (2) 品牌 | Must marked brand |
| (3) 标称电压: 1.5V | Rated voltage 1.5V |
| (4) 端子的极性: + 和 - | Terminal marking + & - |
| (5) 合适的警告语 | Appropriate warnings |

10、接受标准 Acceptance criteria:

采用 GB 2828.1 正常检验一次抽样方案

According to GB2828.1 normal inspection sampling plan at a time

10.1 一、二、三、四部分 The first, second, third, forth part

缺陷分类 Defect classification	致命缺陷 Fatal defects	主要功能性缺陷 The main functional defects	主要缺陷 Main defects	次要缺陷 Minor defects
第一部分 The first part 安全性 safety (CL.8) 正负极标注 two poles marks (CL.9)	× ×			
第二部分 The second part 开路电压 open circuit voltage (CL.5.2) 负载电压 load voltage (CL.5.3.2) 漏液 leakage		× × ×		
第三部分 The third part 尺寸 dimension (CL.4.1) 主要外观缺陷 (CL.11.3) main defects of the visual			× ×	
第四部分 The forth part 次要的外观缺陷 (CL. 11. 4) The minor defects of the visual				×

10.2 第五部分 The fifth part

缺陷分类 Defect classification	测试数量 Samples plan	接受标准 Acceptance criteria
放电测试 discharge test	9	*
漏液 leakage (CL.7.2)	9	0
电池短路 short circuit	5	0
不正确安装 (三充一) Wrong installation	5	0

* 平均放电时间应大于或等于相应的规定值。如果平均值小于规定的值，则应重复做实验，计算新的平均值。如果这个平均值仍然小于规定性能，那么这些电池属于不合格，并且不得再进一步作试验。

* The average discharge tome should be greater than (or equal to) the specifications. If the average discharge time is less than the specification, then it should be tested again and calculating the new average discharge time.

The battery discharge performance of this batch is failed if the new average discharge time is still less than the specification, and shall not be tested again.

11、缺陷分类 Defect classification:

11.1 致命缺陷 (采用特殊检查水平 S-4, AQL 0.15%)

Fatal defects (refer to the special inspection level S-4, AQL 0.15%)

致命缺陷指经过分析、判断和试验表明可能导致用户危险或不安全的缺陷。

The fatal defect: The defects (after analysis, judgment, and experiments) can cause the users to be insecure.

11.2 主要功能性缺陷 (采用特殊检查水平 S-4, AQL 0.25%)

The main functional defects (refer to the special inspection level S-4, AQL 0.25%)

除致命缺陷外, 使电池的放电性能达不到指定要求的缺陷。

The main functional defects: The battery discharge performance can not meet the specification.

11.3 主要缺陷 (采用特殊检查水平 S-4, AQL 0.65%)

Main defects (refer to the special inspection level S-4, AQL 0.65%)

指电池的放电性能达不到要求, 但对电池的有效性能影响很小, 影响电池销售的缺陷。

Main defects: Battery discharge performance can not meet the specification, and little impact, but it will affect sales.

11.4 次要外观缺陷 (一般检查水平 II, AQL 2.5%)

Minor defects (General inspection level II, AQL 2.5%)

指次要的外观缺陷或者划痕并且不影响电池放电性能及销售的缺陷。

Minor defects: The appearance of the minor defects or scratches, but it does not affect the discharge performance and sales.

12、环保要求 Environmental requirements:

产品中不得添加汞、镉、铅, 在生产工序中不得使用汞或镉。

Mercury, cadmium and lead should not be added to the products, and mercury or cadmium should not be used in the production process.

以下为标准 Below is the standard :

汞 $\leq$ 5ppm/每个电池

Hg $\leq$ 5ppm/one battery

镉 $\leq$ 20ppm/每个电池

Cd $\leq$ 20ppm/one battery

铅 $\leq$ 1000ppm/每个电池

Pb $\leq$ 1000ppm/one battery

13、包装 packaging:

13.1 包装方式 Manner of packing

每塑 4 粒, 每盒 12 塑, 每箱 45 盒, 每箱 2160 粒。

4pcs/shrink pack, 12shrink packs/box, 45boxes/carton, 2160pcs/carton.

13.1 包装尺寸 Package dimensions

27.5cm $\times$ 20cm $\times$ 25.2cm

13.2 注意 Attention

包装要符合避免在搬运、运输、和储存过程中机械性损坏的要求。应当选择合适的材料和包装方案，避免无意碰撞、腐蚀和受潮。

The packing should meet the requirement of preventing mechanical damage during the process of handing, transport, and storage. Select suitable material and package to avoid accidental collision, corrosion and dampness.

14、存储 stored:

14.1 电池应贮存在通风良好、阴凉干燥处（贮存温度应在 10℃～30℃之间；相对湿度 40%～70%之间），防止电池电性能下降、池身生锈。

The battery should be stored in a cool, dry and ventilated place (Storage temperature should be between 10 °C and 30°C; Relative humidity between 40% ~ 70%), to prevent the battery performance decline, pool or rust

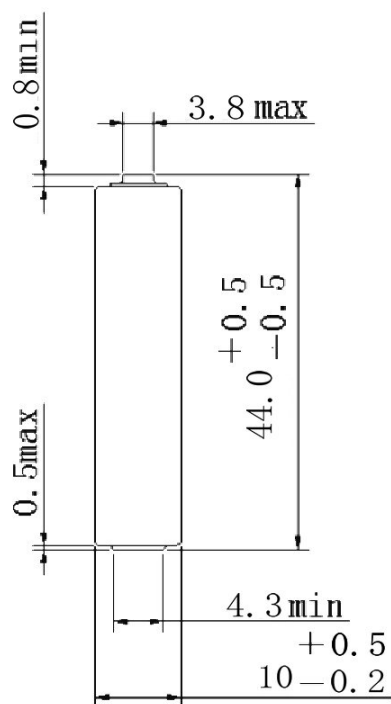
14.2 电池贮存时，如果过多电池箱堆叠，最底层箱中的电池有可能发生变形并导致泄漏。

During the storage, if too many battery boxes are piled up, the battery in the bottom box may deform and leakage.

附表 1 Atteachment1:

尺寸 Dimension:

图示 Design:



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