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电话Tel：020-22131000　邮箱Email：ppdc@iqtcnet.cn　网址Website：https://www.iqtcnet.cn

No: 01112300003330(E)
Date: 2023-08-18

申　请　人： **APPLICANT:**	新利达电池实业（德庆）有限公司 New Leader (De Qing)Battery Industry Co.,Ltd
生 产 单 位： **MANUFACTURE:**	新利达电池实业（德庆）有限公司 New Leader (De Qing)Battery Industry Co.,Ltd
样 品 说 明： **DESCRIPTION OF SAMPLE:**	申请人自送无汞碱性锌锰钮型电池(型号:LR1130)样品 100 个。编号:01112300003330。 One hundred samples of 0 PCT Mercury Alkaline Zinc-Manganese Button Cell（model: LR1130）were submitted by the applicant. The sample number is 01112300003330.
收 样 日 期： **DATE OF SAMPLE RECEIVED:**	2023-7-3
检 测 日 期： **TEST PERIOD:**	2023-7-3~2023-8-18
检 测 要 求： **TEST REQUESTED:**	1. IEC 60086-1：2021《原电池 第 1 部分：总则》 Primary cells and batteries-Part 1: General; 2. IEC 60086-2：2021《原电池 第2部分：外形尺寸和电性能要求》 Primary cells and batteries-Part 2: Physical and electrical specifications. 3. IEC60086-5:2021 《原电池 第5部分：水溶液电解质电池的安全要求》 Primary cells and batteries-Part 5: Safety of batteries with aqueous electrolyte.
检 测 结 果： **TEST RESULT:**	详见第 3～7 页 For the details, refer to the page 3 to 7.
备　　注： **REMARK:**	本报告译文如有任何疑点，概以中文为主。 In case of divergence, the Chinese text shall be regarded as authentic.

检验检测专用章

AUTHORISED BY

Lu Rui Qiang
(Deputy Director)

JHJR46SCG4

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图片/Photo



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检测结果：

Test result:

1. 按 IEC 60086-1：2021 和 IEC 60086-2：2021 检测电池尺寸、极端、标记、放电性能、尺寸稳定性、耐漏液和开路电压，结果如下：

Test Battery dimensions, Terminals, Marking, Discharge performance, Dimensional stability, Leakage and Open-circuit voltage limits according to the specifications of the IEC 60086-1：2021 and IEC 60086-2：2021, results as follow:

检验项目 Test Item	IEC60086-1:2021 and IEC 60086-2:2021 标准要求（摘要） Specifications of IEC60086-1:2021 and IEC 60086-2:2021(digest）	检验结果 Test Result	评定 Conclusion
4.1.2 尺寸（mm） Battery dimensions (mm)	2.75≤高 Height≤3.05	2.98～3.03	合格 Pass
	11.25≤直径 Φ≤11.60	11.48～11.55	合格 Pass
	d_2＞3.8	符合要求 Conformity	合格 Pass
	d_4＞3.8	符合要求 Conformity	合格 Pass
4.1.3 极端 Terminals	符合 IEC60086-2 第 7 条的要求。保证电池能形成并保持良好的电接触。由具有良好导电性能和耐磨的材料制成。 Accordance with clause 7 of IEC 60086-2. Ensure that the batteries make and maintain good electrical contact at all times. Made of materials that provide adequate electrical conductivity and corrosion protection.	符合要求 Conformity	合格 Pass
4.1.6 标记 Marking	应标有如下信息：名称；生产年月或星期，或是使用期限；极性；正常电压；生产商或供应商的名称或商标。 Marked with the following information: designation; year and month or week of manufacture, or the expiration of a guarantee period; polarity of terminals; nominal voltage; name or trade mark of the manufacturer or supplier.	符合要求 Conformity	合格 Pass
4.2.1 放电性能 Discharge performance	电阻 15kΩ，每天 24h 放电，终止电压为 1.2V,平均放电时间≥350h。 Minimum average duration of 158kΩ discharge (Discharge condition: 24h per day, discharge to 1.2V) ≥350h.		合格 Pass
	1050.5 / 1195.0 / 1208.7 / 1201.9 / 1185.3 / 1187.9 / 1190.3 / 1198.8	MAD = 1177.3h	
4.2.2 尺寸稳定性 Dimensional stability	尺寸在测试全过程中必须符合 IEC60086-2 的要求。 The dimensions shall conform with the relevant specified dimensions as given in IEC 60086-2 at all times during testing.	符合要求 Conformity	合格 Pass
4.2.3 耐漏液 Leakage	不得漏液。 No leakage shall occur.	符合要求 Conformity	合格 Pass
4.2.4 开路电压 Open-circuit voltage limits(V)	$1.5^{+0.18}_{0}$ V	1.558～1.572	合格 Pass

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2. 按 IEC 60086-5：2021 检测电池，结果如下：
Test Battery according to the specifications of the IEC 60086-5：2021, results as follow:

检验项目 Test Item	IEC60086-5:2021 标准要求（摘要） Specifications of IEC60086-5:2021 (digest）	检验结果 Test Result	评定 Conclusion
6.2.2.1	**电池部分使用后贮存：**未经放电的电池按 IEC 60086-2 规定的负载电阻最小的那一项应用检验/放电量检验的条件放电，直至其寿命下降了最小平均放电时间(MAD)的 50%，再在（45±5）℃下贮存 30d。电池在检验过程中应不发生泄露、起火和爆炸。 **Storage after partial use**: An undischarged battery is discharged under an application/service output test condition, with the lowest resistive load test as defined in IEC 60086-2 until the service life falls by 50% of the minimum average duration (MAD), value, followed by storage at (45±5) ℃ for 30 days. There shall be no leakage, no fire and no explosion during this test.	不泄露、起火和爆炸 no leakage, no fire and no explosion	合格 Pass
6.2.2.2	**运输-冲击：**按表 3 规定的条件和表 4 规定的步骤进行检验。 第 1 步：记录电池的开路电压。 第 2 步至第 4 步：按表 3 规定和表 4 的步骤进行冲击检验。 第 5 步：电池搁置 1h。 第 6 步：记录检验结果。 电池在检验过程中应不发生泄露、起火和爆炸。 **Transportation-shock:** The shock test shall be carried out under conditions defined in Table 3 and the sequence Table 4. Step 1 Record open circuit voltage in accordance with 5.2. Step 2 to 4 Apply shock test specified in Table 3 and the sequence Table 4. Step 5 Rest battery for 1h. Step 6 Record examination results. There shall be no leakage, no fire and no explosion during this test.	不泄露、起火和爆炸 no leakage, no fire and no explosion	合格 Pass
6.2.2.3	**运输-振动：**按下列条件及表 5 中的步骤进行检验。 振动-对电池施加振幅为 0.8mm，最大总振幅为 1.6mm 的简谐运动。频率变化 1Hz/min，频率范围 10Hz~55Hz。电池分别承受相互垂直的三个方向的振动，每个方向往（10Hz~55Hz）、返(55Hz~10Hz)振动（90±5）min。 第 1 步：记录电池的开路电压。 第 2 步至第 4 步：按表 5 的步骤和 6.2.2.3 的规定进行振动检验。 第 5 步：电池搁置 1h。 第 6 步：记录检验结果。 电池在检验过程中应不发生泄露、起火和爆炸。	不泄露、起火和爆炸 no leakage, no fire and no explosion	合格 Pass

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检验项目 Test Item	IEC60086-5:2021 标准要求（摘要） Specifications of IEC60086-5:2021 (digest)	检验结果 Test Result	评定 Conclusion
	Transportation-vibration: The vibration test shall be carried out under the following test conditions and the sequence in Table 5. Vibration-A simple harmonic motion shall be applied to the battery having an amplitude of 0,8mm, with a total maximum excursion of 1,6mm. The frequency shall be varied at the rate of 1 Hz/min between the limits of 10Hz and 55Hz. The entire range of frequencies (10Hz to 55Hz) and return (55Hz to 10Hz) shall be traversed in (90±5) min for each mounting position (direction of vibration). Step 1 Record open circuit voltage in accordance with 5.2. Step 2 to 4 Apply vibration test specified in 6.2.2.3and the sequence Table 5. Step 5 Rest battery for 1h. Step 6 Record examination results. There shall be no leakage, no fire and no explosion during this test.	不泄露、起火和爆炸 no leakage, no fire and no explosion	合格 Pass
6.2.2.4	**气候-温度循环：**温度循环步骤如下： 1）置电池于检验舱内，在 30min（t1）内将检验舱温度升至(70±5) ℃； 2）保持在此温度 4h（t2）； 3）在 30min（t1）内将检验舱温度降至(20±5)℃，并保持在此温度下 2h（t3）； 4）在 30min（t1）内将检验舱温度降至（-20±5）℃，并保持在此温度下 4h（t3）； 5）在 30min（t1）内将检验舱温度升至（20±5）℃； 6）重复以上步骤继续进行另 9 个循环； 7）经上述 10 个循环后，再存放 7d 后进行检验。 电池在检验过程中应不发生起火和爆炸。 **Climatic-temperature cycling:** Temperature cycling procedure (see 1 to 7) below and/ or Figure 2. 1) Place the batteries in test chamber and raise the temperature of the chamber to (70±5) ℃ within t1=30 min. 2) Maintain the chamber at this temperature for t2=4h. 3) Reduce the temperature of the chamber to（20±5）℃ within t1=30min and maintain at this temperature for t3=2h. 4) Reduce the temperature of the chamber to（-20±5）℃ within t1=30min and maintain at this temperature for t2=4h. 5) Raise the temperature of the chamber to（20±5）℃ within t1=30min. 6) Repeat the sequence for a further nine cycles. 7）After the 10th cycle, store the batteries for seven days prior examination. There shall be no fire and no explosion during this test.	不起火和爆炸 no fire and no explosion	合格 Pass

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检验项目 Test Item	IEC60086-5:2021 标准要求（摘要） Specifications of IEC60086-5:2021 (digest)	检验结果 Test Result	评定 Conclusion
6.3.2.1	**不正确安装:**一个受检电池和 3 个未放过电的、相同型号的内含一个单体电池的附加电池以图 3 方式串联连接，受检电池与其它电池反向连接。回路电阻应不大于 0.1 欧。 电池在检验过程中应不发生起火和爆炸。 **Incorrect installation (four batteries in series):**Four undischarged batteries of the same brand, type and origin shall be connected in series with one reversed (B1) as shown in Figure 3. The circuit shall be completed for 24h or until the case temperature has returned to ambient. The resistance of the inter-connecting circuitry shall not exceed 0,1Ω. There shall be no fire and no explosion during this test.	不适用 Not applicable	------
6.3.2.2	**外部短路：**未经放电的电池按图 4 连接。接通该回路 24h 或至电池外壳温度降至环境温度。电池中的连接电阻应不大于 0.1 欧。 电池在检验过程中应不发生起火和爆炸。 **External short circui**t: An undischarged battery shall be connected as shown in Figure 4. The circuit shall be completed for 24 h or until the battery case temperature has returned to ambient. The resistance of the inter-connecting circuitry shall not exceed 0,1Ω. There shall be no fire and no explosion during this test.	不起火和爆炸 no fire and no explosion	合格 Pass
6.3.2.3	**过放电：**一个未经放电的电池（C1）按 IEC60086.2 规定的 MAD 值最高的那项应用检验或放电量检验的条件放电，直至负荷电压降至 n×0.6V，然后将该放过电的电池（C1）和 3 个相同商标、型号和来源的未放过电的电池按图 5 所示串联连接。接通回路直至总的负荷电压降至 4×（n×0.6V）。 电池在检验过程中应不发生起火和爆炸。 **Overdischarge:** One undischarged battery (C1) is discharged under the application or service output test condition, with the highest MAD value (expressed in time units), as defined in IEC 60086-2 until the on-load voltage falls to (nx0,6v) where n is the number of cells in the battery, type and origin shall be connected in series as shown in Figure 5. The discharge shall be continued until the total on-load voltage falls to four times (nx0,6v). The value of the resistor (R1) shall be approximately four times the lowest value from the resistive load tests specified for that battery in IEC 60086-2. The final value of resistor (R1) shall be the nearest value to that prescribed in 6.4 of IEC 60086-1:2021. There shall be no fire and no explosion during this test.	不适用 Not applicable	------

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6.3.2.4	**自由跌落：**未放过电的电池从 1m 高度跌落在混泥土表面上，每个被测电池应该跌落六次，棱柱形电池的六个面上各一次，圆形电池如图 6 所示在三轴向各两次，然后将被试电池放置 1h。 电池在检验过程中应不发生起火和爆炸。 Free fall test: Undischarged test batteries shall be dropped from a height of 1m onto a concrete surface. Each test battery shall be dropped six times, a prismatic battery once each of its six faces, a round battery twice in each of the three axes shown in Figure 6. The test batteries shall be stored for 1h afterwards. There shall be no fire and no explosion during this test.	不起火和爆炸 no fire and no explosion	合格 Pass

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