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Add: Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Guangzhou, China
Website: www.iqtc.cn Postcode: 510623



QOQCMRSPV

No: 01051500000795-1 (E)
Date: 2015-03-04
Page: 1 of 13

UN38.3 报告 UN38.3 Test Report

样品名称: 锂离子充电电池

Sample Name: Li-ion Rechargeable Battery

委托单位: 惠州隆基电子有限公司

Applicant: VIEW TECH LIMITED



广东出入境检验检疫局检验检疫技术中心

Inspection & Quarantine Technology Center of Guangdong Entry-Exit Inspection
& Quarantine Bureau of The People's Republic of China

1. 我们已尽所知所能实施上述检验, 不能因签发本报告而免除有关各方根据合同和法律所承担的责任和义务。All inspections are carried out conscientiously to the best of our knowledge and ability. This report does not in any respect absolve the other related parties from his contractual and legal obligations.
2. 一般情况, 检验结果仅对申请人所送样品负责, 未经本实验室书面同意, 不得部分复制本报告。The results shown in this test report refer only to the sample(s) tested unless otherwise stated. Without the prior written approval from the issuing laboratory, the report shall not be reproduced except in full.

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| | | | |
|--|--|-----------------------------|-------------------------|
| 样品名称 Sample Name | 中文 Chinese | 锂离子充电电池 | |
| | 英文 English | Li-ion Rechargeable Battery | |
| 型号 Model | BP290 RECHARGEABLE BATTERY 10.8V 2500mAh 27Wh | | |
| 委托单位 Applicant | 惠州隆基电子有限公司 VIEW TECH LIMITED | | |
| 委托单位地址 Applicant Address | 惠州市博罗县石湾镇南亚北路 No.2, Libo Shui Industrial District, NanYa Bei Lu, Shek Wan Boluo, Huizhou, Guangdong, China | | |
| 生产单位 Manufacture | 惠州隆基电子有限公司 VIEW TECH LIMITED | | |
| 生产单位地址 Manufacture Address | 惠州市博罗县石湾镇南亚北路 No.2, Libo Shui Industrial District, NanYa Bei Lu, Shek Wan Boluo, Huizhou, Guangdong, China | | |
| 测试方法和判定标准 Test method and criterion | 联合国《关于危险货物运输的建议书 试验和标准手册》 ST/SG/AC.10/11/Rev.5, amend 1, 38.3 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS", Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend 1, 38.3 | | |
| 样品外观 Appearance | 该样品为固体, 标称电压为 10.8V, 额定电容量为 2500mAh。 The battery is solid. The Nominal Voltage is 10.8V, The Rated Capacity is 2500mAh. | | |
| 接样时间 Accepted date | 2015-02-11 | 测试日期 Test date | 2015-02-11 ~ 2015-03-03 |
| 测试项目 Test items | 高度模拟、温度试验、振动、冲击、外部短路、撞击、过度充电、强制放电。 Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Impact, Overcharge, Forced discharge. | | |
| 结论 Conclusion | 经测试, 该样品符合联合国《关于危险货物运输的建议书 试验和标准手册》 ST/SG/AC.10/11/Rev.5, amend 1, 38.3 标准要求。 The sample has passed the test items of UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS", Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, amend 1, 38.3. | | |
| 备注 Remark | 检测结果仅对样品有效。 The test results are only valid for the test samples submitted the applicant. | | |



批准
Approver:

审核
Checker:

主检
Appraiser:

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| 序号 No. | 测试项目名称 Name of test | 标准要求或标准条款号 Stand requirement or the clause number of standard | 测试结果 Test result | 本项结论 Test conclusion | 备注 Remark | |
|-----------|--|--|-------------------------|-------------------------|-----------------|---|
| 1 | 高空模拟 Altitude simulation | 联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend 1, 38.3 试验 T.1 Test T.1 | 见附表 1 See Appendix 1 | 合格 Passed | / | |
| 2 | 温度循环 Thermal test | 联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend 1, 38.3 试验 T.2 Test T.2 | 见附表 2 See Appendix 2 | 合格 Passed | / | |
| 3 | 振动 Vibration | 联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend 1, 38.3 试验 T.3 Test T.3 | 见附表 3 See Appendix 3 | 合格 Passed | / | |
| 4 | 冲击 Shock | 联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend 1, 38.3 试验 T.4 Test T.4 | 见附表 4 See Appendix 4 | 合格 Passed | / | |
| 5 | 外部短路 External short circuit | 联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend 1, 38.3 试验 T.5 Test T.5 | 见附表 5 See Appendix 5 | 合格 Passed | / | |
| 6 | 撞击 Impact | 联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend 2, 38.3 试验 T.6 Test T.6 | 见附表 6 See Appendix 6 | 合格 Passed | / | |
| 7 | 过度充电 Overcharge | 联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend 1, 38.3 试验 T.7 Test T.7 | 见附表 7 See Appendix 7 | 合格 Passed | / | |
| | 强制放电 Forced discharge | 联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend 1, 38.3 试验 T.8 Test T.8 | 见附表 8 See Appendix 8 | 合格 Passed | / | |
| | 测试环境 Test environment condition | 环境温度: 20°C-25°C; 环境湿度: 45%-75% Ambient temperature: 20°C-25°C, Ambient humidity: 45%-75% | | | | |
| | 分包测试情况 Subcontracted test condition | 测试项目 Test items | / | | | |
| | | 分包实验室 Subcontracted Laboratory | 名称 Name | / | 邮编 Post code | / |
| | | | 地址 Address | / | 电话 Tel | / |



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| 序号 No. | 附表 1 Appendix 1 | 测试项目名称 Name of test | 高空模拟 Altitude simulation | | | | |
|---|----------------------------|--|-----------------------------|----------------------------|-----------------------|-------------------------|---------------------|
| 标准要求 Requirement of Standard | | 试验电池或电池组在压力等于或低于 11.6kPa 和环境温度 20°C±5°C 下存放至少 6h。试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。 Test cells and batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature 20 ± 5 °C. Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states. | | | | | |
| 样品状态 Sample status | | b1#~b4#: 第一个循环完全充电的电池; b1#~b4#: first cycle in fully charged states; b5#~b8#: 第五十个循环完全充电的电池。 b5#~b8#: after 50 cycles ending in fully charged states. | | | | | |
| 样品编号 Sample No. | 测试前 Before | | 测试后 After | | 质量损失 Mass loss (%) | 剩余电压 Residual OCV(%) | 测试结果 Test result |
| | 电池质量 m ₁ (g) | 开路电压 v ₁ (v) | 电池质量 m ₂ (g) | 开路电压 v ₂ (v) | | | |
| b1# | 171.7 | 11.85 | 171.7 | 11.87 | 0.02 | 100.17 | O |
| b2# | 171.3 | 11.84 | 171.2 | 11.85 | 0.02 | 100.08 | O |
| b3# | 171.3 | 11.84 | 171.3 | 11.84 | 0.00 | 100.00 | O |
| b4# | 168.9 | 11.85 | 168.9 | 11.85 | -0.02 | 100.00 | O |
| b5# | 171.0 | 11.80 | 171.0 | 11.79 | 0.01 | 99.92 | O |
| b6# | 172.6 | 11.82 | 171.6 | 11.83 | 0.59 | 100.08 | O |
| b7# | 171.5 | 11.75 | 171.4 | 11.76 | 0.02 | 100.09 | O |
| b8# | 171.7 | 11.84 | 171.7 | 11.85 | 0.02 | 100.08 | O |
| <p>注: L-泄漏; V-排气; D-解体; R-破裂; F-起火; O-无泄漏、无排气、无解体、无破裂、无起火。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.</p> | | | | | | | |

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| 序号 No. | 附表 2 Appendix 2 | 测试项目名称 Name of test | 温度循环 Thermal test | | | | |
|---|---|-------------------------|-------------------------|-------------------------|-----------------------|-------------------------|---------------------|
| 标准要求 Requirement of Standard | <p>试验电池或电池组在试验温度等于 $75^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 下存放至少 6h, 接着在试验温度等于 $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 下存放至少 6h (大型电池或电池组暴露于极端试验温度的时间至少为 12h)。两个极端试验温度之间的最大时间间隔为 30min。重复 10 次, 再将所有试验电池或电池组在环境温度 $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 下存放 24h。试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。</p> <p>Test cells and batteries are to be stored for at least six hours at a test temperature equal to $75 \pm 2^{\circ}\text{C}$, followed by storage for at least six hours at a test temperature equal to $-40 \pm 2^{\circ}\text{C}$. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated 10 times, after which all test cells and batteries are to be stored for 24 hours at ambient temperature ($20 \pm 5^{\circ}\text{C}$). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours. Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.</p> | | | | | | |
| 样品状态 Sample status | <p>b1#~b4#: 第一个循环完全充电的电池; b1#~b4#: first cycle in fully charged states; b5#~b8#: 第五十个循环完全充电的电池。 b5#~b8#: after 50 cycles ending in fully charged states.</p> | | | | | | |
| 样品编号 Sample No. | 测试前 Before | | 测试后 After | | 质量损失 Mass loss (%) | 剩余电压 Residual OCV(%) | 测试结果 Test result |
| | 电池质量 $m_1(\text{g})$ | 开路电压 $v_1(\text{V})$ | 电池质量 $m_2(\text{g})$ | 开路电压 $v_2(\text{V})$ | | | |
| b1# | 171.7 | 11.87 | 171.8 | 11.71 | -0.05 | 98.65 | O |
| b2# | 171.2 | 11.85 | 171.3 | 11.70 | -0.05 | 98.73 | O |
| b3# | 171.3 | 11.84 | 171.4 | 11.69 | -0.05 | 98.73 | O |
| b4# | 168.9 | 11.85 | 169.0 | 11.69 | -0.05 | 98.65 | O |
| b5# | 171.0 | 11.79 | 171.1 | 11.65 | -0.04 | 98.81 | O |
| b6# | 171.6 | 11.83 | 172.6 | 11.69 | -0.62 | 98.82 | O |
| b7# | 171.4 | 11.76 | 171.5 | 11.63 | -0.05 | 98.89 | O |
| b8# | 171.7 | 11.85 | 171.7 | 11.70 | -0.05 | 98.73 | O |
| <p>注: L-泄漏; V-排气; D-解体; R-破裂; F-起火; O-无泄漏、无排气、无解体、无破裂、无起火。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.</p> | | | | | | | |

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| 序号 No. | 附表 3 Appendix 3 | 测试项目名称 Name of test | 振动 Vibration | | | | |
|---|---|----------------------------|----------------------------|----------------------------|--------------------------|----------------------------|---------------------|
| 标准要求 Requirement of Standard | <p>将电池或电池组直接安装或通过夹具安装在振动台的台面上, 用正弦波, 频率在 7Hz 和 200Hz 之间摆动再回到 7Hz 的对数扫频 15min, 对三个互相垂直的电池或电池组安装方向的每个方向重复进行 12 次, 一共振动 3h。试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。</p> <p>Cells and batteries are firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face. Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.</p> | | | | | | |
| 样品状态 Sample status | <p>b1#~b4#: 第一个循环完全充电的电池; b1#~b4#: first cycle in fully charged states; b5#~b8#: 第五十个循环完全充电的电池。 b5#~b8#: after 50 cycles ending in fully charged states.</p> | | | | | | |
| 样品编号 Sample No. | 测试前 Before | | 测试后 After | | 质量损失 Mass loss (%) | 剩余电压 Residual OCV(%) | 测试结果 Test result |
| | 电池质量 m ₁ (g) | 开路电压 v ₁ (v) | 电池质量 m ₂ (g) | 开路电压 v ₂ (v) | | | |
| b1# | 171.8 | 11.71 | 171.7 | 11.70 | 0.00 | 99.91 | O |
| b2# | 171.3 | 11.70 | 171.3 | 11.69 | 0.00 | 99.91 | O |
| b3# | 171.4 | 11.69 | 171.4 | 11.69 | 0.00 | 100.00 | O |
| b4# | 169.0 | 11.69 | 169.0 | 11.68 | 0.00 | 99.91 | O |
| b5# | 171.1 | 11.65 | 171.1 | 11.65 | 0.00 | 100.00 | O |
| b6# | 172.6 | 11.69 | 172.6 | 11.69 | 0.00 | 100.00 | O |
| b7# | 171.5 | 11.63 | 171.5 | 11.62 | 0.00 | 99.91 | O |
| b8# | 171.7 | 11.70 | 171.7 | 11.69 | 0.00 | 99.91 | O |
| <p>注: L-泄漏; V-排气; D-解体; R-破裂; F-起火; O-无泄漏、无排气、无解体、无破裂、无起火。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.</p> | | | | | | | |



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| 序号 No. | 附表 4 Appendix 4 | 测试项目名称 Name of test | 冲击 Shock | | | | |
|---|--|----------------------------|----------------------------|----------------------------|--------------------------|----------------------------|---------------------|
| 标准要求 Requirement of Standard | <p>将电池或电池组用坚硬支架紧固在试验装置上, 对每个电池或电池组以最大加速度 150gn 的半正弦波冲击, 脉冲持续时间 6ms, 但对大型电池或电池组应以最大加速度 50gn 的半正弦波冲击, 脉冲持续时间 11ms。按三个相互垂直的轴向分别对其正负极各冲击 3 次, 共冲击 18 次。各试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。</p> <p>Test cells and batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each cell or battery shall be subjected to a half-sine shock of peak acceleration of 150gn and pulse duration of 6 milliseconds. However, large cells and large batteries shall be subjected to a half-sine shock of peak acceleration of 50gn and pulse duration of 11 milliseconds. Each cell or battery shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks. Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.</p> | | | | | | |
| 样品状态 Sample status | <p>b1#~b4#: 第一个循环完全充电的电池; b1#~b4#: first cycle in fully charged states; b5#~b8#: 第五十个循环完全充电的电池。 b5#~b8#: after 50 cycles ending in fully charged states.</p> | | | | | | |
| 样品编号 Sample No. | 测试前 Before | | 测试后 After | | 质量损失 Mass loss (%) | 剩余电压 Residual OCV(%) | 测试结果 Test result |
| | 电池质量 m ₁ (g) | 开路电压 v ₁ (v) | 电池质量 m ₂ (g) | 开路电压 v ₂ (v) | | | |
| b1# | 171.7 | 11.70 | 171.7 | 11.70 | 0.00 | 100.00 | O |
| b2# | 171.3 | 11.69 | 171.3 | 11.68 | 0.00 | 99.91 | O |
| b3# | 171.4 | 11.69 | 171.3 | 11.68 | 0.04 | 99.91 | O |
| b4# | 169.0 | 11.68 | 169.0 | 11.66 | 0.00 | 99.83 | O |
| b5# | 171.1 | 11.65 | 171.3 | 11.64 | -0.15 | 99.91 | O |
| b6# | 172.6 | 11.69 | 172.6 | 11.67 | 0.00 | 99.83 | O |
| b7# | 171.5 | 11.62 | 171.5 | 11.60 | 0.00 | 99.83 | O |
| b8# | 171.7 | 11.69 | 171.7 | 11.67 | 0.00 | 99.83 | O |
| <p>注: L-泄漏; V-排气; D-解体; R-破裂; F-起火; O-无泄漏、无排气、无解体、无破裂、无起火。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.</p> | | | | | | | |



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| 序号 No. | 附表 5 Appendix 5 | 测试项目名称 Name of test | 外部短路 External short circuit |
|--|---|------------------------|--------------------------------|
| 标准要求 Requirement of Standard | 待试验电池或电池组的外壳温度稳定在 55°C±2°C 后, 在 55°C±2°C 下使电池或电池组经受总外电阻小于 0.1Ω 的短路条件, 当电池或电池组外壳温度回到 55°C±2°C 后继续至少 1h, 然后短路断开, 再观察电池或电池组 6h 才结束试验。电池或电池组的外壳温度应不超过 170°C, 并且试验后 6h 内应无解体、无破裂和无燃烧。 The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 55 ± 2 °C and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at 55 ± 2 °C. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 55 ± 2 °C. The cell or battery must be observed for a further six hours for the test to be concluded. Cells and batteries meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly, no rupture and no fire within six hours of this test. | | |
| 样品状态 Sample status | b1#~b4#: 第一个循环完全充电的电池; b1#~b4#: first cycle in fully charged states; b5#~b8#: 第五十个循环完全充电的电池。 b5#~b8#: after 50 cycles ending in fully charged states. | | |
| 样品编号 Sample No. | 样品表面最高温度 Max External Temperature (°C) | 测试结果 Test result | 备注 Remark |
| b1# | 56.9 | O | / |
| b2# | 57.2 | O | / |
| b3# | 57.3 | O | / |
| b4# | 57.4 | O | / |
| b5# | 56.9 | O | / |
| b6# | 56.5 | O | / |
| b7# | 56.3 | O | / |
| b8# | 56.2 | O | / |
| 注: D-解体; R-破裂; F-起火; O-无解体、无破裂、无起火。 Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire. | | | |



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| 序号 No. | 附表 6 Appendix 6 | 测试项目名称 Name of test | 撞击 Impact |
|--|---|------------------------|--------------|
| 标准要求 Requirement of Standard | <p>撞击 (适用与直径不小于 18mm 的圆柱形电池): 试样电池或元件电池放在平坦光滑的表面上, 一根 316 型不锈钢棒横放在试样的中心, 钢棒的直径 (15.8±0.1) 毫米, 长度至少 6 厘米, 或电池最长端的尺度, 取二者之长者, 用一块 (9.1 ± 0.1) 千克的重锤从 (61±2.5) 厘米高处跌落到钢棒和试样交叉处。使用一个几乎没有摩擦的、对落体重锤阻力最小的垂直轨道或管道加以控制, 垂直轨道或管道用于引导落锤沿与水平表面支撑表面呈 90 度落下。 接受撞击的试样, 纵轴应于平坦表面平行并与横放在试中心的直径 (15.8±0.1) 毫米弯曲表面的纵轴垂直, 每个试样只经受一次撞击。 试验电池或电池组的组成电芯外部温度不超过 170℃, 并且在试验过程中和试验后 6 小时内应无解体、无破裂、无起火。 Impact (applicable to cylindrical cells not less than 18mm in diameter): Test procedure – Impact (applicable to cylindrical cells greater than 20 mm in diameter) The sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm ±0.1mm diameter, at least 6 cm long, or the longest dimension of the cell, whichever is greater, Type 316 stainless steel bar is to be placed across the centre of the sample. A 9.1 kg ± 0.1 kg mass is to be dropped from a height of 61 ± 2.5 cm at the intersection of the bar and sample in a controlled manner using a near frictionless, vertical sliding track or channel with minimal drag on the falling mass. The vertical track or channel used to guide the falling mass shall be oriented 90 degrees from the horizontal supporting surface. The test sample is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8 mm ± 0.1mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact. Cells and component cells meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly and no fire during the test and within six hours after this test.</p> | | |
| 样品状态 Sample status | C1#~C5#: 第一个循环 50%的额定容量的电芯。 C1#~C5#: first cycle at 50% of the design rated capacity of cell. | | |
| 样品编号 Sample No. | 样品表面最高温度 Max External Temperature (°C) | 测试结果 Test result | 备注 Remark |
| C1# | 57.5 | O | / |
| C2# | 57.8 | O | / |
| C3# | 57.3 | O | / |
| C4# | 57.1 | O | / |
| C5# | 57.0 | O | / |
| <p>注: D-解体; R-破裂; F-起火; O-无解体、无破裂、无起火。 Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.</p> | | | |



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| 序号 No. | 附表 7 Appendix 7 | 测试项目名称 Name of test | 过度充电 Overcharge |
|--|---|------------------------|--------------------|
| 标准要求 Requirement of Standard | 充电电流必须是制造商建议的最大连续充电电流的两倍, 试验的最小电压应为如下: (a) 制造商建议的充电电压不大于 18V 时, 试验的最小电压应是电池组最大充电电压的两倍或 22V 两者中的较少者。 (b) 制造商建议的充电电压大于 18V 时, 试验的最小电压应是最大充电电压的 1.2 倍。 可再充电电池组在环境温度下试验 24h。试样在试验后 7 天内应无解体和无燃烧。 The charge current shall be twice the manufacturer's recommended maximum continuous charge current. The minimum voltage of the test shall be as follows: (a) When the manufacturer's recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V. (b) When the manufacturer's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage. Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. Rechargeable batteries meet this requirement if there is no disassembly and no fire within seven days of the test. | | |
| 样品状态 Sample status | b9#~b12#: 第一个循环完全充电的电池; b9#~b12#: first cycle in fully charged states; b13#~b16#: 第五十个循环完全充电的电池。 b13#~b16#: after 50 cycles ending in fully charged states. | | |
| 样品编号 Sample No. | 测试结果 Test result | 备注 Remark | |
| b9# | O | / | |
| b10# | O | / | |
| b11# | O | / | |
| b12# | O | / | |
| b13# | O | / | |
| b14# | O | / | |
| b15# | O | / | |
| b16# | O | / | |
| 注: D-解体; R-破裂; F-起火; O-无解体、无破裂、无起火。 Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire. | | | |



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| | | | | | |
|--|---|------------------------|--------------------|--------------------------|--------------|
| 序号 No. | 附表 8 Appendix 8 | 测试项目名称 Name of test | | 强制放电 Forced discharge | |
| 标准要求 Requirement of Standard | <p>试验原电池或可再充电电池在环境温度下与 12V 的直流电源串联, 在起始电流等于制造商给定的最大放电电流的条件下强制放电。原电池或可再充电电池在试验后 7 天内应无解体和无燃烧。</p> <p>Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12 V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer. The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in Ampere). Primary or rechargeable cells meet this requirement if there is no disassembly and no fire within seven days of the test.</p> | | | | |
| 样品状态 Sample status | <p>C6#~C15#: 第一个循环完全放电的电芯; C6#~C15#: first cycle in fully discharged states; C16#~C25#: 第五十个循环完全放电的电芯。 C16#~C25#: after 50 cycles in fully discharged states.</p> | | | | |
| 样品编号 Sample No. | 测试结果 Test result | 备注 Remark | 样品编号 Sample No. | 测试结果 Test result | 备注 Remark |
| C6# | O | / | C16# | O | / |
| C7# | O | / | C17# | O | / |
| C8# | O | / | C18# | O | / |
| C9# | O | / | C19# | O | / |
| C10# | O | / | C20# | O | / |
| C11# | O | / | C21# | O | / |
| C12# | O | / | C22# | O | / |
| C13# | O | / | C23# | O | / |
| C14# | O | / | C24# | O | / |
| C15# | O | / | C25# | O | / |
| <p>注: D-解体, R-破裂, F-起火; O-无解体、无破裂、无起火。 Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.</p> | | | | | |



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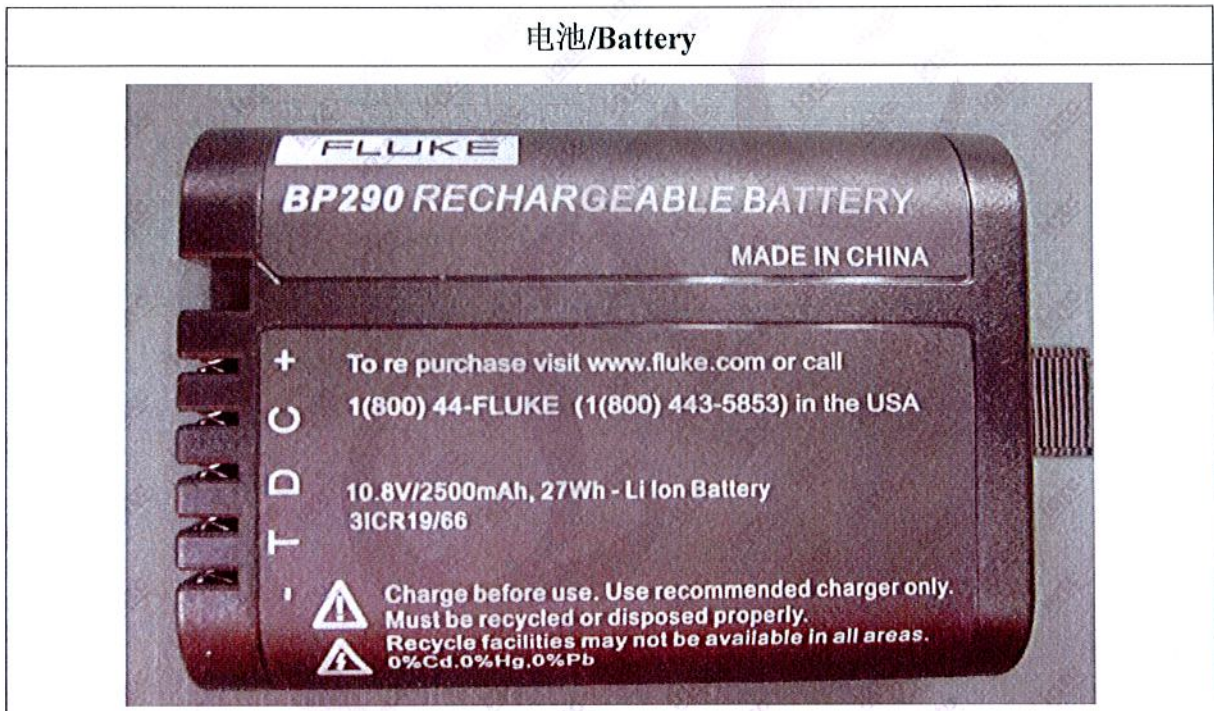
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样品图片 Photo of the sample

电池/Battery



电芯/Cell



* * * * *

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4. 客户必须如实提供样品及资料, 并保证申报品名和样品以及运输货物相同, 否则本检测单位不承担任何相关责任。

The client should provide samples and relevant data, at the same time, they should guarantee the consistence of the product's name they declared, the samples they provided and the goods to be transported. Otherwise we will not bear any relevant responsibilities.

5. 本报告涂改无效。

The test report is invalid if altered.

6. 对检验报告若有异议, 应于收到报告之日起十五日内向检验单位提出。

Objection to the test report must be submitted to IQTC within 15 days.

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