



UN38.3 Test Report

UN38.3 检测报告

Report No.: P23051801001
报告编号:

Name of Products: Lithium Thionyl Chloride Battery
产品名称: 锂亚硫酰氯电池

Model and Spec.: ER34615, 3.6V 19000mAh Lithium Content 锂含量: 4.9g
型号规格:

Applicant: Hubei Zhongju (EEMB) Energy Power Co., Ltd.
委托单位: 湖北中聚能源有限公司

Manufacturer: Hubei Zhongju (EEMB) Energy Power Co., Ltd.
生产厂商: 湖北中聚能源有限公司

Date of issue: 2023-05-23
签发日期:

Shenzhen NTEK New Energy Technology Co., Ltd.

深圳市北测新能源技术有限公司

Applicant 委托单位	Hubei Zhongju (EEMB) Energy Power Co., Ltd. 湖北中聚能源有限公司	
Address of Applicant 委托单位地址	(Slantwise Opposite the Dongfeng Primary School) Jiangxu Road, Economic Development Zone, Hanchuan, Hubei, 432300, China. 湖北省汉川市经济开发区江许路（东风小学斜对面）	
Manufacturer 生产厂商	Hubei Zhongju (EEMB) Energy Power Co., Ltd. 湖北中聚能源有限公司	
Address of manufacturer 生产厂商地址	(Slantwise Opposite the Dongfeng Primary School) Jiangxu Road, Economic Development Zone, Hanchuan, Hubei, 432300, China. 湖北省汉川市经济开发区江许路（东风小学斜对面）	
Name of Products 产品名称	Lithium Thionyl Chloride Battery 锂亚硫酰氯电池	
Model/Type 型号	ER34615	
Ratings 额定参数	3.6V 19000mAh Lithium Content 锂含量: 4.9g	
Date of receipt of test item 接收日期	2023-03-20	
Completion Date 完成日期	2023-04-03	
Tested according to	测试依据: United Nations Manual of Tests and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the seventh revised edition (ST/SG/AC.10/11/Rev.7). 联合国《试验和标准手册》, 第三部分, 38.3 节锂金属和锂离子电池要求, 第七修订版(ST/SG/AC.10/11/Rev.7)	
Tests performed	测试项目: Test T.1: Altitude simulation 试验 T.1: 高度模拟 Test T.5: External short circuit 试验 T.5: 外部短路 Test T.2: Thermal Test 试验 T.2: 温度试验 Test T.6: Impact 试验 T.6: 撞击 Test T.3: Vibration 试验 T.3: 振动 Test T.8: Forced discharge 试验 T.8: 强制放电 Test T.4: Shock 试验 T.4: 冲击	
Test Conclusion	试验结论: The Lithium Thionyl Chloride Battery submitted by Hubei Zhongju (EEMB) Energy Power Co., Ltd. is tested according to the United Nations <i>Manual of Tests and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the seventh revised edition (ST/SG/AC.10/11/Rev.7)</i> . Test results: PASS 由湖北中聚能源有限公司提交的锂亚硫酰氯电池按照联合国《试验和标准手册》, 第三部分, 38.3 节锂 金属和锂离子电池要求, 第七修订版(ST/SG/AC.10/11/Rev.7)进行测试。 测试结果: 合格	
Tested by:	Jake Chen	陈嘉南
主检人:	陈嘉南	
Reviewed by:	Bill Ye	叶志标
审核人:	叶志标	
Approved by:	Jesse Zhang	张士杰
批准人:	张士杰	
		报告单位（盖章） Seal of NTEK

General product information 通用产品信息:			
Model/Type 型号	ER34615	Rated Rating 额定值	3.6V 19000mAh
Aggregate lithium content 合计锂含量	4.9g	Cut-off Voltage 放电截止电压	2.0V
Standard Discharge Current 标准放电电流	3mA	Max. Discharge Current 最大放电电流	150mA
Appearance 外观	Silvery, Black and Cylindrical 银色、黑色和圆柱形	Dimension (D×H) 尺寸(mm)	Φ32.9×61.5
Classification 类别	Small Lithium metal cell 小型锂金属电芯		

Sample description 样品说明			
Type 类型	Sample No. 样品编号	Sample Sub-No. 样品子编号	State of samples 样品状态
Cell 电池芯	NE230308090015-X*	001~010	Undischarged 未放电状态
		011~020	Fully discharged 完全放电状态
		021~025	Undischarged 未放电状态
		026~030	Fully discharged 完全放电状态
		031~040	Fully discharged 完全放电状态
* "X" contained in Sample No. represents Sample Sub-No., it consists of three digit. 包含在样品编号中的 "X" 表示样品子编号, 由 3 位数字组成。			

Test environment condition: Room temperature: 15°C-25°C; Room humidity: 40-70%

试验环境条件: 环境温度: 15°C-25°C; 环境湿度: 40-70%

Remark 备注:

All test data of this report are based on the original test report P23032003901, dated by 2023-04-03.

本报告中的所有测试数据基于原始报告 P23032003901, 出版日期为 2023-04-03。

Summaries of testing 测试摘要:

All cell types are subjected to tests T.1 to T.6 and T.8. Tests T.1 to T.5 are conducted in sequence on the same cells. Tests T.6 and T.8 are conducted using not otherwise tested cells.

所有类型的电芯均应进行T.1至T.6和T.8项试验。电芯必须按顺序在相同的一组电芯上进行试验T.1至T.5。试验T.6和T.8应使用另外未试验过的电芯。

In order to quantify the mass loss, the following procedure is provided:

$$\text{Mass loss}(\%)=(M_1-M_2)/M_1 \times 100$$

为了量化质量损失, 可用以下公式计算:

$$\text{质量损失}(\%)=(M_1-M_2)/M_1 \times 100$$

Where M_1 is the mass before the test and M_2 is the mass after the test. When mass loss does not exceed the values in Table below, it is considered as "no mass loss".

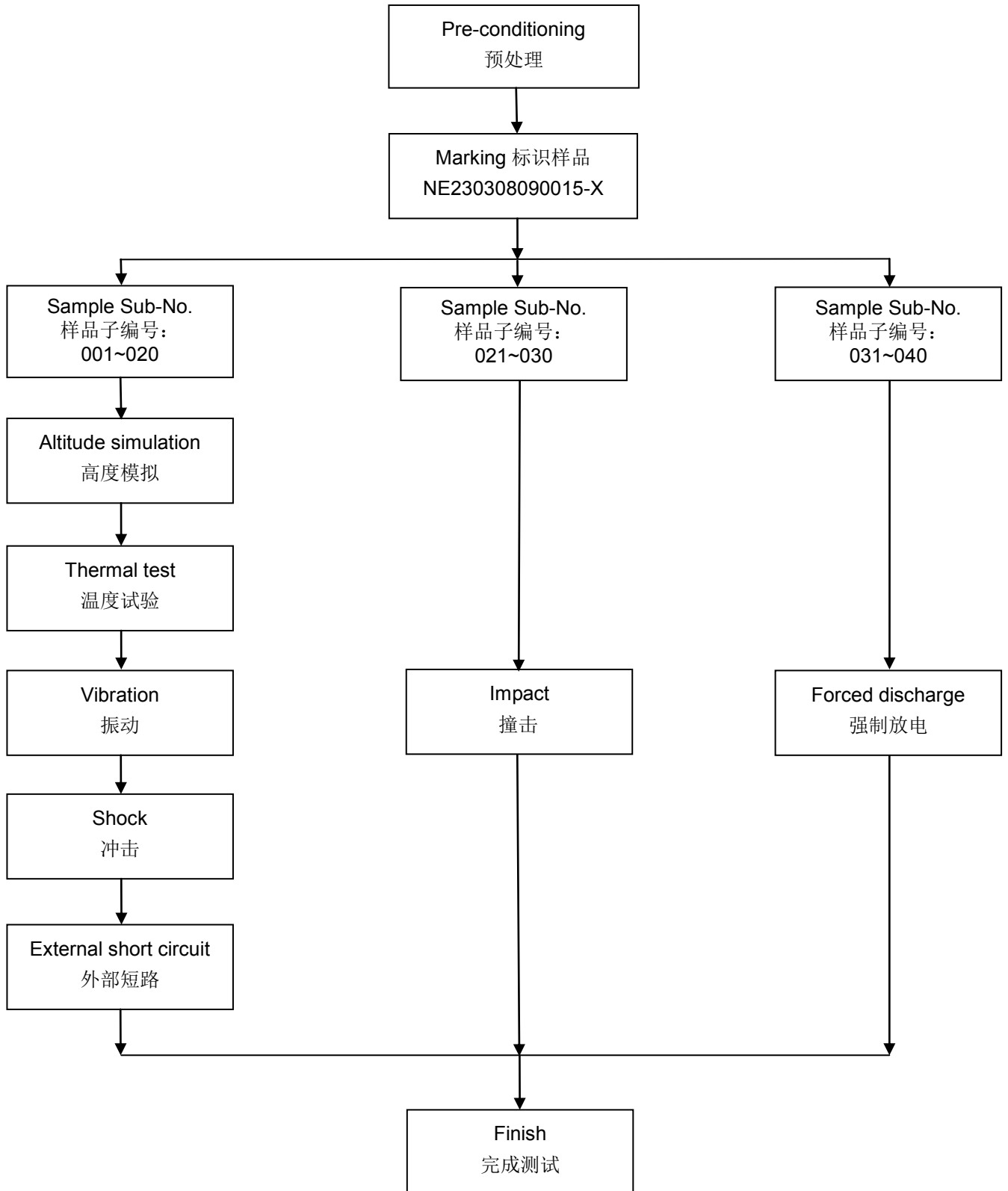
式中: M_1 是试验前的质量, M_2 是试验后的质量。如果质量损失不超过下表所列的数值, 应视为“无质量损失”。

Mass M of cell or battery 电芯或电池的质量	Mass loss limit 质量损失限值
$M < 1\text{g}$	0.5%
$1\text{g} \leq M \leq 75\text{g}$	0.2%
$M > 75\text{g}$	0.1%

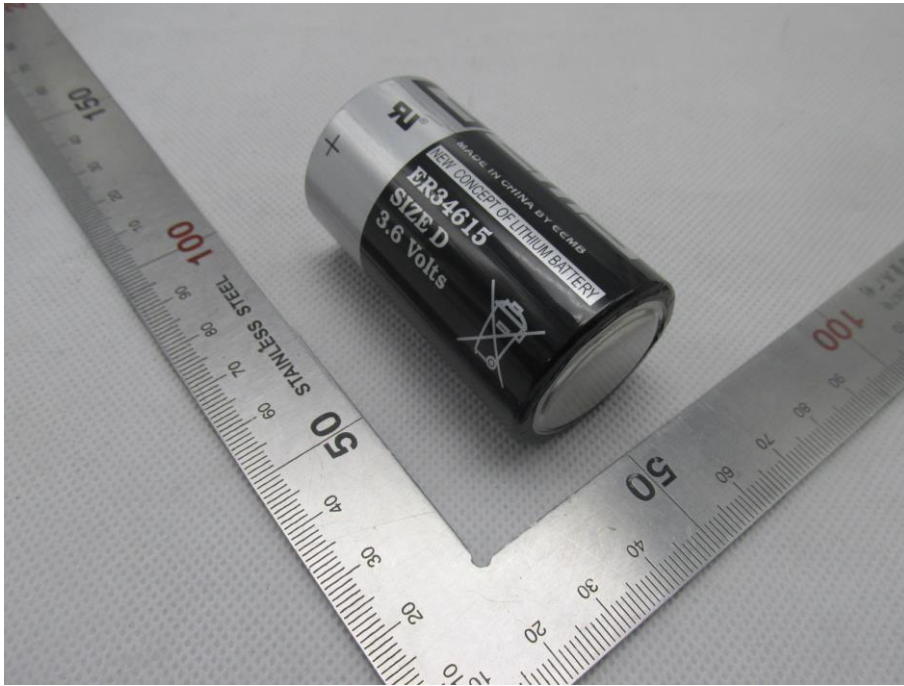
In tests T.1 to T.4, cells meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells at fully discharged states.

在T.1至T.4的试验中, 电芯须满足无渗漏、无泄气、无解体、无破裂和无起火, 并且每个试验电芯在试验后的开路电压不小于其在进行这一试验前电压的90%, 关于电压的要求不适用于完全放电状态的试验电芯。

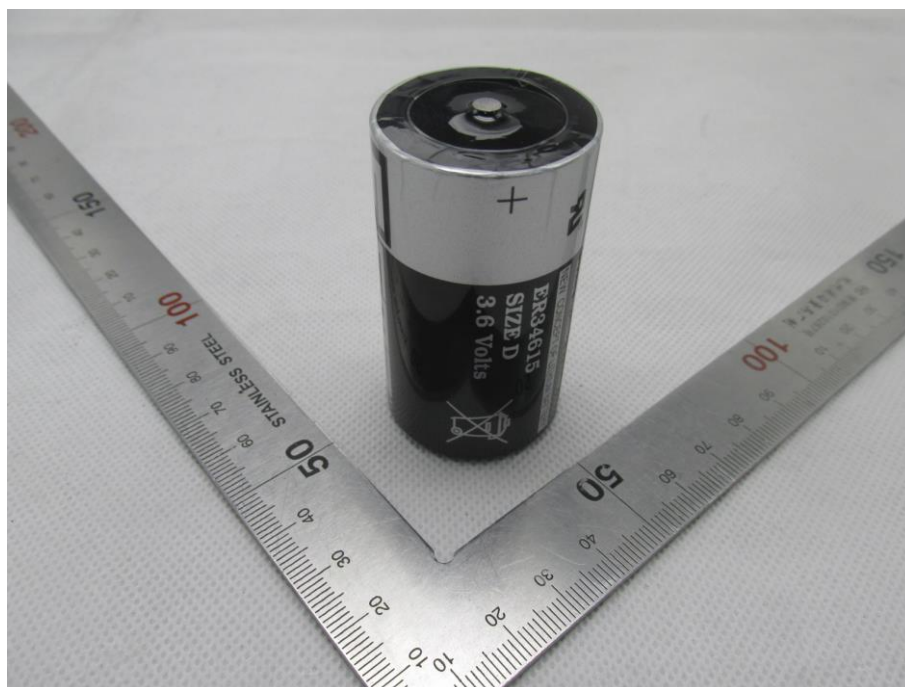
Test Procedure 测试程序



Photos of sample 样品照片



Photos of sample 样品照片



Test T.1: Altitude simulation 试验T.1: 高度模拟

Test method 测试方法

Cells are stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature (20 ± 5°C).
试验电芯被放置在压力等于或低于11.6 kPa和环境温度(20±5°C)下存放至少6小时。

Requirement 要求

Cells meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell 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 at fully discharged states.
电芯须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电芯在试验后的开路电压不小于其在进行这一试验前电压的90%，关于电压的要求不适用于完全放电状态的试验电芯。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
001	100.26	3.675	100.25	3.674	0.010	99.97	PASS 合格
002	100.39	3.676	100.38	3.674	0.010	99.95	PASS 合格
003	100.64	3.676	100.63	3.675	0.010	99.97	PASS 合格
004	100.41	3.676	100.40	3.675	0.010	99.97	PASS 合格
005	100.75	3.677	100.74	3.676	0.010	99.97	PASS 合格
006	100.39	3.676	100.38	3.675	0.010	99.97	PASS 合格
007	100.46	3.678	100.45	3.677	0.010	99.97	PASS 合格
008	100.37	3.676	100.36	3.675	0.010	99.97	PASS 合格
009	100.59	3.676	100.58	3.675	0.010	99.97	PASS 合格
010	100.28	3.675	100.27	3.674	0.010	99.97	PASS 合格
011	100.26	-	100.25	-	0.010	-	PASS 合格
012	100.39	-	100.38	-	0.010	-	PASS 合格
013	100.64	-	100.63	-	0.010	-	PASS 合格
014	100.41	-	100.40	-	0.010	-	PASS 合格
015	100.75	-	100.74	-	0.010	-	PASS 合格
016	100.39	-	100.38	-	0.010	-	PASS 合格
017	100.46	-	100.45	-	0.010	-	PASS 合格
018	100.37	-	100.36	-	0.010	-	PASS 合格
019	100.59	-	100.58	-	0.010	-	PASS 合格
020	100.28	-	100.27	-	0.010	-	PASS 合格

Notes 注释:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试后，电芯未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 20.7°C

Test T.2: Thermal test 试验T.2: 温度试验

Test method 测试方法

Cells are to be stored for at least six hours at a test temperature equal to $72 \pm 2^\circ\text{C}$, 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 are to be stored for 24 hours at ambient temperature ($20 \pm 5^\circ\text{C}$).

电芯放置在试验温度等于 $72 \pm 2^\circ\text{C}$ 的条件下存放至少6小时,接着再在试验温度等于 $-40 \pm 2^\circ\text{C}$ 的条件下存放至少6小时。两个极端试验温度之间的最大时间间隔为30分钟。此程序重复进行,共完成10次,接着将所有试验电芯在环境温度($20 \pm 5^\circ\text{C}$)下存放24小时。

Requirement 要求

Cells meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell 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 at fully discharged states.

电芯须无渗漏、无泄气、无解体、无破裂和无起火,并且每个试验电芯在试验后的开路电压不小于其在进行这一试验前电压的90%,关于电压的要求不适用于完全放电状态的试验电芯。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
001	100.25	3.674	100.21	3.638	0.040	99.02	PASS 合格
002	100.38	3.674	100.34	3.637	0.040	98.99	PASS 合格
003	100.63	3.675	100.58	3.636	0.050	98.94	PASS 合格
004	100.40	3.675	100.35	3.637	0.050	98.97	PASS 合格
005	100.74	3.676	100.70	3.639	0.040	98.99	PASS 合格
006	100.38	3.675	100.33	3.638	0.050	98.99	PASS 合格
007	100.45	3.677	100.41	3.637	0.040	98.91	PASS 合格
008	100.36	3.675	100.31	3.636	0.050	98.94	PASS 合格
009	100.58	3.675	100.53	3.637	0.050	98.97	PASS 合格
010	100.27	3.674	100.22	3.637	0.050	98.99	PASS 合格
011	100.25	-	100.21	-	0.040	-	PASS 合格
012	100.38	-	100.34	-	0.040	-	PASS 合格
013	100.63	-	100.59	-	0.040	-	PASS 合格
014	100.40	-	100.36	-	0.040	-	PASS 合格
015	100.74	-	100.70	-	0.040	-	PASS 合格
016	100.38	-	100.33	-	0.050	-	PASS 合格
017	100.45	-	100.41	-	0.040	-	PASS 合格
018	100.36	-	100.31	-	0.050	-	PASS 合格
019	100.58	-	100.54	-	0.040	-	PASS 合格
020	100.27	-	100.22	-	0.050	-	PASS 合格

Notes 注释:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试后,电芯未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 20.7°C

Test T.3: Vibration 试验 T.3: 振动

Test method 测试方法

Cells 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.

The logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1 g_n is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 g_n occurs (approximately 50 Hz). A peak acceleration of 8 g_n is then maintained until the frequency is increased to 200 Hz.

电芯紧固于振动台台面，但不得造成电芯变形，并能准确可靠地传播振动。振动应是正弦波形，对数扫描频率在7 Hz和200 Hz之间，再回到7 Hz，1次循环时间为15分钟。这一振动过程须对三个互相垂直的电芯安装方位的每一方向重复进行12次，总共为时3小时。其中一个振动方向必须与端面垂直。

对数扫频方式：从7 Hz开始，保持1 g_n 的最大加速度，直到频率达到18 Hz。然后将振幅保持在0.8mm（总位移1.6mm），并增加频率直到峰值加速度达到8 g_n （频率约为50 Hz）。将峰值加速度保持在8 g_n 直到频率增加到200 Hz。

Requirement 要求

Cells meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire during the test and after the test and if the open circuit voltage of each test cell directly after testing in its third perpendicular mounting position is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells at fully discharged states.

测试中和测试后电芯须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电芯在第三个垂直安装方位上的试验后立即测得的开路电压不小于在进行这一试验前电压的90%，关于电压的要求不适用于完全放电状态的试验电芯。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
001	100.21	3.638	100.21	3.638	0.000	100.0	PASS 合格
002	100.34	3.637	100.34	3.636	0.000	99.97	PASS 合格
003	100.58	3.636	100.57	3.636	0.010	100.0	PASS 合格
004	100.35	3.637	100.35	3.637	0.000	100.0	PASS 合格
005	100.70	3.639	100.70	3.638	0.000	99.97	PASS 合格
006	100.33	3.638	100.32	3.638	0.010	100.0	PASS 合格
007	100.41	3.637	100.40	3.637	0.010	100.0	PASS 合格
008	100.31	3.636	100.31	3.636	0.000	100.0	PASS 合格
009	100.53	3.637	100.52	3.635	0.010	99.95	PASS 合格
010	100.22	3.637	100.22	3.636	0.000	99.97	PASS 合格

011	100.21	-	100.21	-	0.000	-	PASS 合格
012	100.34	-	100.34	-	0.000	-	PASS 合格
013	100.59	-	100.58	-	0.010	-	PASS 合格
014	100.36	-	100.36	-	0.000	-	PASS 合格
015	100.70	-	100.69	-	0.010	-	PASS 合格
016	100.33	-	100.32	-	0.010	-	PASS 合格
017	100.41	-	100.41	-	0.000	-	PASS 合格
018	100.31	-	100.31	-	0.000	-	PASS 合格
019	100.54	-	100.53	-	0.010	-	PASS 合格
020	100.22	-	100.22	-	0.000	-	PASS 合格

Notes 注释:

During and after the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试中和测试后, 电芯未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 20.7°C

Test T.4: Shock 试验 T.4: 冲击

Test method 测试方法

Cells are secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test cell. Each cell is subjected to a half-sine shock of peak acceleration of 150 g_n and pulse duration of 6 milliseconds. Each cell is 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 for a total of 18 shocks.

试验电芯用刚性支架紧固在试验装置上, 支架支撑着每个试验电芯的所有安装面。每个电芯须经受峰值加速度 150 g_n和脉冲持续时间6 ms的半正弦波冲击。每个电芯须在三个互相垂直的电芯安装方位的正方向经受三次冲击, 接着在反方向经受三次冲击, 总共经受18次冲击。

Requirement 要求

Cells meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell 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 at fully discharged states.

电芯须无渗漏、无泄气、无解体、无破裂和无起火, 并且每个试验电芯在试验后的开路电压不小于其在进行这一试验前电压的90%, 关于电压的要求不适用于完全放电状态的试验电芯。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
001	100.21	3.638	100.21	3.638	0.000	100.0	PASS 合格
002	100.34	3.636	100.34	3.636	0.000	100.0	PASS 合格
003	100.57	3.636	100.56	3.636	0.010	100.0	PASS 合格
004	100.35	3.637	100.35	3.637	0.000	100.0	PASS 合格
005	100.70	3.638	100.69	3.638	0.010	100.0	PASS 合格

006	100.32	3.638	100.32	3.636	0.000	99.95	PASS 合格
007	100.40	3.637	100.40	3.637	0.000	100.0	PASS 合格
008	100.31	3.636	100.31	3.636	0.000	100.0	PASS 合格
009	100.52	3.635	100.51	3.635	0.010	100.0	PASS 合格
010	100.22	3.636	100.21	3.636	0.010	100.0	PASS 合格
011	100.21	-	100.21	-	0.000	-	PASS 合格
012	100.34	-	100.34	-	0.000	-	PASS 合格
013	100.58	-	100.57	-	0.010	-	PASS 合格
014	100.36	-	100.36	-	0.000	-	PASS 合格
015	100.69	-	100.68	-	0.010	-	PASS 合格
016	100.32	-	100.32	-	0.000	-	PASS 合格
017	100.41	-	100.41	-	0.000	-	PASS 合格
018	100.31	-	100.31	-	0.000	-	PASS 合格
019	100.53	-	100.52	-	0.010	-	PASS 合格
020	100.22	-	100.22	-	0.000	-	PASS 合格

Notes 注释:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试后, 电芯未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 20.4°C

Test T.5: External short circuit 试验T.5: 外部短路

Test method 测试方法

Cells to be tested are heated for a period of time necessary to reach a homogeneous stabilized temperature of 57 ± 4 °C, measured on the external case. This period of time depends on the size and design of the cell and is assessed and documented. Then the cell at 57 ± 4 °C is subjected to one short circuit condition with a total external resistance of less than 0.1 ohm.

This short circuit condition is continued for at least one hour after the cell external case temperature has returned to 57 ± 4 °C.

The short circuit and cooling down phases are conducted at least at ambient temperature.

试验电芯首先被加热或恒定一段时间, 使其达到 57 ± 4 °C并使其外表面温度均匀恒定在 57 ± 4 °C。该加热时间或热恒定时间的长短取决于该电芯的尺寸和设计, 并同时加以评估及提供文件证明。然后该电芯在 57 ± 4 °C的条件下承受一个外部总阻抗小于0.1Ω的短路条件。

该短路测试持续到电芯外表面温度返回至 57 ± 4 °C后再保持至少1小时。

该短路和冷却阶段均被执行在 57 ± 4 °C的环境温度下。

Requirement 要求

Cells meet this requirement if their external temperature does not exceed 170°C and there is no disassembly, no rupture and no fire during the test and within six hours after test.

电芯外壳温度不超过170°C, 并且在试验过程中及试验后6小时内无解体、无破裂, 无起火。

Test data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Maximum outer casing temperature 电池表面最高温度 (°C)	Results 结果
001	98.7	PASS 合格
002	97.0	PASS 合格
003	96.7	PASS 合格
004	97.9	PASS 合格
005	97.2	PASS 合格
006	98.9	PASS 合格
007	96.5	PASS 合格
008	97.9	PASS 合格
009	98.7	PASS 合格
010	98.5	PASS 合格
011	97.2	PASS 合格
012	98.7	PASS 合格
013	98.5	PASS 合格
014	97.6	PASS 合格
015	96.0	PASS 合格
016	97.8	PASS 合格
017	97.6	PASS 合格
018	97.0	PASS 合格
019	97.5	PASS 合格
020	97.9	PASS 合格

Notes 注释:

There is no disassembly, no rupture and no fire during the test and within six hours after test.

电芯在测试中和测试后 6 小时内未解体、未破裂，未起火。

Room temperature 环境温度: 20.7°C

Test T.6: Impact 试验T.6: 撞击

Test method 测试方法

Each cell is to be placed on a flat smooth surface. A 15.8 mm ±0.1 mm 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.

每个电芯放在平坦光滑的表面上。一根 316 型不锈钢棒横放在试样中心，钢棒直径 15.8 ± 0.1 毫米，长度至少 6 厘米，或电芯的最长尺度，取二者中较大者。将一块 9.1 ± 0.1 kg 的重锤从 61 ± 2.5 厘米高处跌落到钢棒和试样交叉点，使用一个几乎没有摩擦的、对落体重锤阻力很小的垂直导轨或管道加以控制。垂直导轨或管道用于引导落锤沿与水平支撑表面呈 90 度落下。

接受撞击的试样，纵轴应与测试平面平行并与横放在试样中心的直径 15.8 ± 0.1 毫米弯曲表面的纵轴垂直。每一试样只经受一次撞击。

Requirement 要求

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 the test.

电芯外壳温度不超过 170°C ，并且在试验过程中及试验后 6 小时内无解体，无起火。

Test data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Maximum outer casing temperature 电池芯表面最高温度 ($^{\circ}\text{C}$)	Results 结果
021	25.7	PASS 合格
022	24.9	PASS 合格
023	25.8	PASS 合格
024	25.0	PASS 合格
025	24.2	PASS 合格
026	25.3	PASS 合格
027	25.4	PASS 合格
028	25.7	PASS 合格
029	25.3	PASS 合格
030	25.0	PASS 合格

Notes 注释:

There is no disassembly, no rupture and no fire during the test and within six hours after the test.

电芯在测试中和测试后 6 小时内未解体、未起火。

Room temperature 环境温度: 20.4°C

Test T.8: Forced discharge 试验 T.8: 强制放电

Test method 测试方法

Each cell is forced discharged at ambient temperature by connecting it in series with a 12V 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 is forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in ampere).

每个电芯在环境温度下与 12V 直流电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。

电芯与一个适当大小的电阻负载串联以调节到规定大小的放电电流。每块电芯的放电时间（单位为 h）等于电芯的额定容量除以试验初始放电电流（单位 A）。

Requirement 要求

Cells meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

电芯在试验过程中和试验后 7 天内无解体，无起火。

Test data showed in table below 测试数据见下表

Initial current 初始电流(mA)		150mA	
Supply voltage 试验电压(Vdc)		12Vdc	
Time interval 试验时间(Minutes)		7600 Minutes	
Sample Sub-No. 样品子编号	Results 结果	Sample Sub-No. 样品子编号	Results 结果
031	PASS 合格	036	PASS 合格
032	PASS 合格	037	PASS 合格
033	PASS 合格	038	PASS 合格
034	PASS 合格	039	PASS 合格
035	PASS 合格	040	PASS 合格

Notes 注释:

There is no disassembly and no fire during the test and within seven days after the test.

电芯在测试中和测试后 7 天内未解体，未着火。

Room temperature 环境温度: 20.5°C

*******End of Test Report 检测报告结束*******

Important Notice

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