



三帕认证

Material Safety Data Sheet

Product Name: Lithium Ion Battery
Model: WT851750
Revision Date: Jan, 02, 2020
Report No.: HT20200102MSDS20
Compiler: *Peter Ye*
Reviewer: *Andy Li*
Approver: *Leozhi*



Guangzhou CP-UP Certification Technology Service Co., Ltd.





Material Safety Data Sheet

SECTION 1 - CHEMICAL AND COMPANY IDENTIFICATION

Name of Sample: Lithium Ion Battery	Model and Ratings: WT 851750 3.7V 800mAh 2.96Wh
Company: Ningbo Huitong New Energy Technology Co., Ltd.	Address: Room 16-15/16-16, Block B, Building Liyuanshangdu, No39, Lane158, South Section, Huan Cheng West Road, Ningbo, China
Zip code: 315000	Fax: /
E-mail: yancheng@huitong-energy.com	Emergency Telephone: 0574-87681913

SECTION2 – HAZARDS IDENTIFICATION

Hazards Identification:

The battery has passed the test items of UN Model Regulations, Manual of Test and Criteria Section UN38.3

Emergency Overview:

Caution: Avoid contact and inhalation the electrolyte contained inside the battery.

SECTION3 – COMPOSITION/INFORMATION ON INGREDIENT

Ingredient	CAS No.	Concentration(%)
Lithium Cobalt oxide	12190-79-3	37
Graphite	7782-42-5	20
Phosphate(1-), hexafluoro-,lithium	21324-40-3	18
Copper	7440-50-8	10
Aluminum	7429-90-5	6
PVC(Chloroethylene,polymer)	9002-86-2	3
PVDF	24937-79-9	5
Nickel	7440-02-0	1

SECTION 4 – FIRST AID MEASURES

Eye Exposure:

In case of contact with eyes, flush with copious of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Skin Exposure:

If the internal battery materials of an opened battery cell some into contact with skin, immediately flush with plenty of water.

Inhalation Exposure:

If inhaled the internals of battery vomiting. Seeking Immediate medical attention.

Ingestion Exposure:

If swallowed, do not induce vomiting. Seek immediate medical attention.

SECTION 5 – FIRE FIGHTING MEASURES

Danger characteristic:

Exposure to excessive heat can cause venting of the liquid electrolyte. Battery may burst and release hazardous decomposition products when exposed to a fire situation.

Hazardous combustion products:

Corrosive gas may be emitted during fire.

Fire-Fighting method& media

The stuff must equip with filtermask (full mask) or isolated breathing apparatus. The stuff must wear the clothes which can defense the fire in the upwind direction. Remove the container to the open space as soon as possible. Spray water on the containers in the fireplace to keep them cool until finish extinguishment
Media: plenty of water, dry chemical powder or carbon dioxide .

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Emergency treatment:

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area and allow the batteries to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate waste.

SECTION 7 – HANDLING AND STORAGE

Handling:

1. Do not allow battery terminates to contact each other, or contact with other metals.
2. Do not put the cell or battery into a fire or heat it. Do not solder the cell directly. Do not use or leave the cell or battery in a place near fire or heaters.
3. Do not expose the battery to excessive physical shock or vibration.
- 4 Do not immerse, throw, and wet a battery in water.
- 5 Short-circuiting should be avoided. Short circuit will reduces the life of the battery and can lead to ignition of surrounding materials. Physical contact with to short- circuited battery can cause skin burn.
6. The batteries should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container.
7. Place the cell beyond the child packing and container.

8. Do not connect the battery directly to an electric outlet or cigarette socket in a car.
9. Be sure to use the specified charger for battery, and follow the charging instructions correctly.
10. Do not mix old and new batteries together, neither with Ni-Cd, dry batteries or another manufacturer batteries or product.

Storage:

1. Batteries should be separated from other materials and stored in a noncombustible, well ventilated, sprinkler-protected structure with sufficient clearance between walls and battery stacks.
2. Keep the sample in the cool, dry and well-ventilated place(temperature:-20~30degree C humidity:45~85%). Do not exposure to direct sunlight for long periods. Keep away from fire and heating sources. Don't keep the samples with oxidizer and acid.
3. charge the battery every 6 months to the amount specified by the manufacture, even if the battery is not used.
4. Equip with relevant types and quantities of the extinguishment instruments. The storage place should be equipped with suitable shelter materials for divulgence handling.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION**Engineering Control:**

Keep away from heat and open flame. Supply with sufficient partial air exhaust. Store in a cool, dry place.

Respiratory Protection:

Not necessary under conditions of normal use. Wear self-contained breathing filtermask if the density exceed in the air. Wear breathing apparatus under the condition of emergency rescue or evacuation.

Eyes Protection:

Not necessary under conditions of normal use. Wear protective glasses if handling a leaking or ruptured battery.

Skin and Body Protection:

Not necessary under conditions of normal use. Wear fireproofing, gas defense clothes in case of handling a leaking or ruptured battery.

Hands Protection:

Not necessary under conditions of normal use. Wear chemical resistant rubber .

Other Protections:

No smoking, dining and drinking water in the workplace. Keep good habit of hygiene.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES**Appearance:**

Blue

Physical state:

Solid

Form:

Cylindrical

Odor:

Odorless

Solubility:

Insoluble in water.

SECTION 10 – STABILITY AND REACTIVITY



Stability: Stable under normal temperature and pressure.
Distribution of Ban: Strong oxidizer, strong acid and corrosives
Conditions to Avoid: Fire source, heating source, disassemble, external short circuit, crushes, deformation, high temperature above 100°C, direct sunlight and high humidity, immerse in water or overcharge.
Hazardous Polymerization: Will not occur.
Hazardous Decomposition Products: Metal oxides, CO, CO ₂

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity: N/A
Sub-acute and Chronic Toxicity: N/A
Irritation Data: The internal battery materials may cause irritation to eyes and skin.
Sensitization: Lithium transition metal oxidate-Li(M)m(O)n: the nervous system of respiratory organs may be stimulated sensitively Copper: Sensitization of the skin may be caused by the long-term or repetitive contact.
Mutagenicity: No information is available.
Carcinogenicity: No information is available.
Others: Since the materials in this battery are sealed in the can, the potential for exposure to the components of the battery is negligible, when the battery is used as directed. However technical or electrical abuse of the battery may result in the release of battery contents.

SECTION 12 – ECOLOGICAL INFORMATION

Eco-toxicity: No data available.
Biodegradable: No data available.
Mobility in soil: No data available.
Bioconcentration or biological accumulation: No data available.
Other harmful effects: Don't abandon the battery into environment, may cause water or soil pollution.

SECTION 13 - DISPOSAL CONSIDERATIONS

Appropriate Method of Substance:

The battery should be completely discharged prior to disposal in order to prevent short circuit. The battery contains recyclable materials. It is suggested recycle. Refer to National or Local regulations before handling. Disposal of the battery should be performed by permitted, professional disposal firms knowledgeable in National or Local regulations of hazardous waste treatment and hazardous waste transportation.

SECTION 14 – TRANSPORT INFORMATION

IATA:	Proper Shipping Name: Lithium ion batteries/packed with equipment/contained in equipment
	UN Number: UN3480/UN3481
	The battery has passed the test items of UN Model Regulations, Manual of Tests and Criteria, Part III, sub-section 38.3. According to IATA DGR 61 th Edition, PACKING INSTRUCTION 965 ~ 967 of section II or IB for transportation.
IMO:	Proper Shipping Name: Lithium ion batteries/packed with equipment/contained in equipment
	UN Number: UN3480/UN3481
	The battery has passed the test items of UN Model Regulations, Manual of Tests and Criteria, Part III, sub-section 38.3. The goods is not restricted to IMO IMDG Code (Amend 39-18) according to special provision188.

SECTION 15 – REGULATORY INFORMATION

US DOT:

Effective December 29,2004, the DOT requires that the outside of each package the contains primary lithium batteries, regardless of size of number of batteries, batteries, be labeled with the following statement:” PRIMARY LITHIUM BATTERIES-FOBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT”, The labeling requirement covers shipments via highway, rail vessel or cargo-only aircraft and covers all shipment inside, into or out of the US. The label must be in contrasting color and the letters must be 12mm (0.5 in) in height for packages weighing more than 30Kg and 6mm (0.25 in) in height for packages weighting less than 30Kg.

SECTION 16 – ADDITIONAL INFORMATION

Date:

2020-1-2

Department:

Guangzhou CP-UP Certification Technology Service Co., Ltd.
 No.1, Aigang 7th Lane, Yunxing Zhukeng Village, Shiqiao Street, Panyu District, Guangzhou City, China
 Tel.: 0086-20-31127037
 WEB: www.cp-up.com
 Email: info@cp-up.com



Other Information:

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. We make no warranty of merchantability or any other warranty express or implied, With respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of the information for their particular purposes. In no way shall we be liable for any claims, losses, or damage of any third party or for lost profits or any special, indirect, consequential or exemplary damages arising from using the above information.



中国认可
国际互认
检测
TESTING
CNAS L4065



Report No.:
报告编号: NBHT20160520U05

检验报告

TEST REPORT

NAME OF SAMPLE: Li-ion Polymer Battery

产品名称: 锂离子聚合物电池

CLIENT: NingboHuitong New Energy Technology Co., Ltd

委托单位: 宁波慧通新能源科技有限公司

CLASSIFICATION OF TEST: Commission test

检验类别: 委托检测

广州邦禾检测技术有限公司

Guangzhou MCM Certification and Testing Co., Ltd



General information 基本资料	
Name of samples 样品名称	Li-ion Polymer Battery 锂离子聚合物电池
Type/ Model 型号规格	WT 851750 3,7V 800mAh 2,95Wh
Trade mark 商标	—
Commission by 委托单位	NingboHuitong New Energy Technology Co., Ltd 宁波慧通新能源科技有限公司
Commissioner address 委托单位地址	Room 1303, BlockB, BuildingLiyuanshangdu, No39, Lane158, South Section, Huan Cheng West Road, Ningbo, China 浙江省宁波市环城西路南段 158 弄 39 号丽园尚都 B 座 1303 室
Manufacturer 制造商	NingboHuitong New Energy Technology Co., Ltd 宁波慧通新能源科技有限公司
Manufacturer address 制造商地址	Room 1303, BlockB, BuildingLiyuanshangdu, No39, Lane158, South Section, Huan Cheng West Road, Ningbo, China 浙江省宁波市环城西路南段 158 弄 39 号丽园尚都 B 座 1303 室
Factory 生产厂	NingboHuitong New Energy Technology Co., Ltd 宁波慧通新能源科技有限公司
Factory address 生产厂地址	Room 1303, BlockB, BuildingLiyuanshangdu, No39, Lane158, South Section, Huan Cheng West Road, Ningbo, China 浙江省宁波市环城西路南段 158 弄 39 号丽园尚都 B 座 1303 室
Appearance: 样品外观颜色	Silver 银白色
Sample status 样品状态	Good 完好
Package of goods 样品外包装	—
Quantity of sample 样品数量	43pcs
Sample identification 样品标识序号	c1#~c43#
Reference standard 参考标准	MH/T1052-2013 《Tests for lithium batteries transported by air》 MH/T1052-2013 《航空运输锂电池测试规范》
Receiving date 接样日期	2016.06.13
Completing date 完成日期	2016.06.27

Test Conclusion 测试结论					
No.序号	Name of test 测试项目名称	Testing standard 测试标准	Test result 测试结果	Conclusion 本项结论	Remarks 备注
1	Altitude simulation 高度模拟	UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5, amend.2, 38.3. 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. 2 38.3.	See Appendix 1 见 附表 1	Passed 合格	/
2	Thermal test 温度试验		See Appendix 2 见 附表 2	Passed 合格	/
3	Vibration 振动		See Appendix 3 见 附表 3	Passed 合格	/
4	Shock 冲击		See Appendix 4 见 附表 4	Passed 合格	/
5	External Short-circuit 外部短路		See Appendix 5 见 附表 5	Passed 合格	/
6	Impact 撞击		/	/	N/A 不适用
	Crush 挤压		See Appendix 6 见 附表 6	Passed 合格	/
7	Overcharge 过度充电		See Appendix 7 见 附表 7	Passed 合格	/
8	Forced discharge 强制放电	See Appendix 8 见 附表 8	Passed 合格	/	
Conclusion/结论: <p>The Li-ion Polymer Batteries submitted by NingboHuitong New Energy Technology Co., Ltd had 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.2, 38.3.</p> <p>由宁波慧通新能源科技有限公司送检的锂离子聚合物电池符合联合国《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. 2, 38.3 的要求。</p> <p style="text-align: center;">Seal/公章: </p> <p style="text-align: center;">Date of issue:/日期: Jun. 28, 2016</p>					
WARM PROMPT: This test report can be used worldwide (including apply for the certification for safe transport of Shanghai Research Institute of Chemical Industry). 温馨提示: 此份报告全球通用 (包含申请上海化工鉴定书)。					

Approver: Liang Hongcheng

批准: Liang Hongcheng

Checker: Fu Ziwen

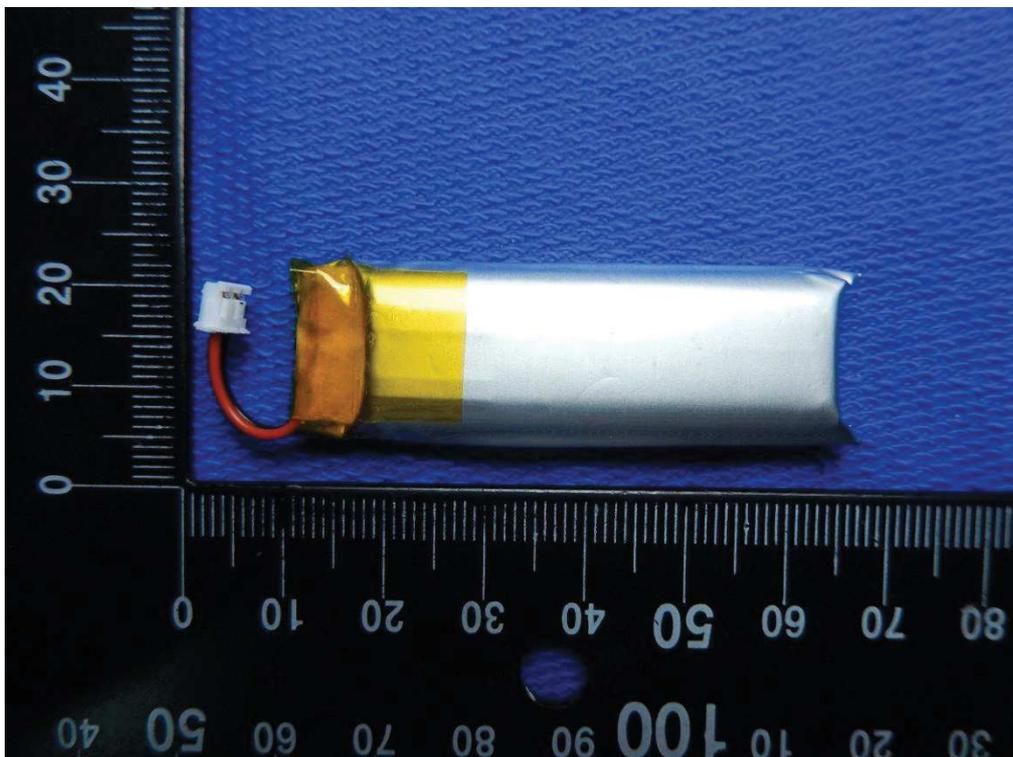
审核: Fu Ziwen

Tester: Zhi Juncai

测试: Zhi Juncai

Photos of samples and markings
样品及标识照片

Battery (WT 851750 3,7V 800mAh 2,95Wh)



Appendix 1

附表 1

Test Items 测试项目	Altitude simulation 高度模拟						
1,1	Test procedure 测试步骤						
	Test cells and batteries shall be stored at a pressure of 11,6kPa or less for at least six hour at ambient temperature (20±5°C). 试验电池芯和电池在环境温度(20±5°C)下, 储存在小于等于 11, 6kPa 的压力下至少六小时。						
1,2	Sample status 样品状态						
	C1#~C10#, at first cycle in fully charged states; C1#~C10#, 在第一个循环完全充电状态;						
1,3	Result 测试结果						
Sample No. 样品编号	Before 测试前		After 测试后		Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果
	Mass 样品质量 (g)	Voltage 开路电压 (V)	Mass 样品质量 (g)	Voltage 开路电压 (V)			
C1#	14,159	4,18	14,156	4,18	0,021	100,00	O
C2#	14,117	4,18	14,116	4,18	0,007	100,00	O
C3#	13,917	4,18	13,914	4,18	0,022	100,00	O
C4#	13,895	4,18	13,894	4,18	0,007	100,00	O
C5#	14,399	4,18	14,396	4,18	0,021	100,00	O
C6#	13,718	4,19	13,715	4,18	0,022	99,76	O
C7#	13,724	4,18	13,721	4,18	0,022	100,00	O
C8#	14,417	4,18	14,415	4,18	0,014	100,00	O
C9#	13,529	4,18	13,528	4,18	0,007	100,00	O
C10#	13,799	4,18	13,797	4,18	0,014	100,00	O
<p>Note: L-Leakage, V-Venting, D -Disassembly, R -Rupture, F-Fire, O-No leakage, no venting, no disassembly, no rupture, no fire.</p> <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。</p>							

Appendix 2

附表 2

Test Items 测试项目	Thermal test 温度试验						
1,1	Test procedure 测试步骤						
	<p>Test cells and batteries 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 in 30 minutes, This procedure is to be repeated until 10 total cycles are complete, after which all test cells and batteries are to be stored for 24 hours at ambient temperature ($20\pm 5^{\circ}\text{C}$).</p> <p>将电芯和电池在温度为 $72\pm 2^{\circ}\text{C}$ 的条件下贮存不少于 6 个小时, 然后, 在温度 $-40\pm 2^{\circ}\text{C}$ 条件下贮存不少于 6 个小时, 两个温度间的间隔最长为 30min, 重复操作上述步骤直到 10 次, 然后, 将其在环境温度为 $20\pm 5^{\circ}\text{C}$ 的条件下放置 24 个小时。</p>						
1,2	Sample status 样品状态						
	<p>C1#~C10#, at first cycle in fully charged states; C1#~C10#, 在第一个循环完全充电状态;</p>						
1,3	Result 测试结果						
Sample No. 样品编号	Before 测试前		After 测试后		Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果
	Mass 样品质量 (g)	Voltage 开路电压 (V)	Mass 样品质量 (g)	Voltage 开路电压 (V)			
C1#	14,156	4,18	14,157	4,10	0,000	98,09	O
C2#	14,116	4,18	14,114	4,08	0,014	97,61	O
C3#	13,914	4,18	13,915	4,14	0,000	99,04	O
C4#	13,894	4,18	13,894	4,13	0,000	98,80	O
C5#	14,396	4,18	14,398	4,13	0,000	98,80	O
C6#	13,715	4,18	13,718	4,11	0,000	98,33	O
C7#	13,721	4,18	13,722	4,11	0,000	98,33	O
C8#	14,415	4,18	14,414	4,08	0,007	97,61	O
C9#	13,528	4,18	13,526	4,09	0,015	97,85	O
C10#	13,797	4,18	13,797	4,14	0,000	99,04	O
<p>Note: L-Leakage, V-Venting, D -Disassembly, R -Rupture, F-Fire, O-No leakage, no venting, no disassembly, no rupture, no fire.</p> <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。</p>							

Appendix 3

附表 3

Test Items 测试项目	Vibration 振动						
1,1	Test procedure 测试步骤						
	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 wave form with a logarithmic sweep between 7Hz and 200Hz 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 position of the cell. 将电芯和电池牢固地安装在振动台的台面上，然后开始振动。振动以正弦波形式，以 7Hz 增加至 200Hz，然后再减少回到 7Hz 为一个循环，一个循环持续 15 分钟的对数扫频。每个电芯和电池从三个互相垂直的方向上循环 12 次，3 个小时。						
1,2	Sample status 样品状态						
	C1#~C10#, at first cycle in fully charged states; C1#~C10#, 在第一个循环完全充电状态;						
1,3	Result 测试结果						
Sample No. 样品编号	Before 测试前		After 测试后		Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果
	Mass 样品质量 (g)	Voltage 开路电压 (V)	Mass 样品质量 (g)	Voltage 开路电压 (V)			
C1#	14,157	4,10	14,159	4,10	0,000	100,00	O
C2#	14,114	4,08	14,116	4,08	0,000	100,00	O
C3#	13,915	4,14	13,917	4,14	0,000	100,00	O
C4#	13,894	4,13	13,896	4,13	0,000	100,00	O
C5#	14,398	4,13	14,401	4,13	0,000	100,00	O
C6#	13,718	4,11	13,721	4,11	0,000	100,00	O
C7#	13,722	4,11	13,725	4,11	0,000	100,00	O
C8#	14,414	4,08	14,417	4,08	0,000	100,00	O
C9#	13,526	4,09	13,529	4,09	0,000	100,00	O
C10#	13,797	4,14	13,796	4,14	0,007	100,00	O
Note: L -Leakage, V -Venting, D -Disassembly, R -Rupture, F -Fire, O -No leakage, no venting, no disassembly, no rupture, no fire. 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。							

Appendix 4

附表 4

Test Items 测试项目	Shock 冲击						
1,1	Test procedure 测试步骤						
	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 battery, Each cell or battery shall be subjected to a half-sine shock of peak acceleration of 150gn and pulse duration of 6 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. 以稳固的托架固定住每个电芯和电池样品的全部配件表面。对每个电芯或电池以峰值为 150gn 的半正弦的加速度撞击，脉冲持续 6 毫秒。按三个互相垂直轴向分别对其正负极各碰撞三次，每个电芯或电池碰撞总次数为 18 次。						
1,2	Sample status 样品状态						
	C1#~C10#, at first cycle in fully charged states; C1#~C10#, 在第一个循环完全充电状态;						
1,3	Result 测试结果						
Sample No. 样品编号	Before 测试前		After 测试后		Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果
	Mass 样品质量 (g)	Voltage 开路电压 (V)	Mass 样品质量 (g)	Voltage 开路电压 (V)			
C1#	14,159	4,10	14,159	4,09	0,000	99,76	O
C2#	14,116	4,08	14,117	4,08	0,000	100,00	O
C3#	13,917	4,14	13,916	4,13	0,007	99,76	O
C4#	13,896	4,13	13,896	4,12	0,000	99,76	O
C5#	14,401	4,13	14,400	4,13	0,007	100,00	O
C6#	13,721	4,11	13,721	4,10	0,000	99,76	O
C7#	13,725	4,11	13,725	4,11	0,000	100,00	O
C8#	14,417	4,08	14,416	4,08	0,007	100,00	O
C9#	13,529	4,09	13,526	4,08	0,022	99,76	O
C10#	13,796	4,14	13,798	4,14	0,000	100,00	O
Note: L -Leakage, V -Venting, D -Disassembly, R -Rupture, F -Fire, O -No leakage, no venting, no disassembly, no rupture, no fire. 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。							

Appendix 5

附表 5

Test Items 测试项目	External short circuit 外部短路		
1,1	Test procedure 测试步骤		
	<p>The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches $55\pm 2^{\circ}\text{C}$ 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 $55\pm 2^{\circ}\text{C}$, This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to $55\pm 2^{\circ}\text{C}$, the cell or battery must be observed for a further six hour for the test to be concluded.</p> <p>保持试验环境温度稳定在 $55\pm 2^{\circ}\text{C}$，以使电芯或电池样品外表温度达到 $55\pm 2^{\circ}\text{C}$，然后，在此温度下，将其正负极用小于 0,1 欧姆的线路短接，待电芯或电池的外表温度恢复到 $55\pm 2^{\circ}\text{C}$ 之后再持续 1 小时以上，对电芯或电池必须进一步观察 6 个小时才能下结论。</p>		
1,2	Sample status 样品状态		
	C1#~C10#, at first cycle in fully charged states; C1#~C10#, 在第一个循环完全充电状态;		
1,3	Result 测试结果		
Sample No. 样品编号	Max. External Temperature 样品表面最高温度 ($^{\circ}\text{C}$)	Test result 测试结果	Remark 备注
C1#	56,1	O	/
C2#	55,7	O	/
C3#	56,3	O	/
C4#	56,2	O	/
C5#	55,9	O	/
C6#	56,0	O	/
C7#	56,3	O	/
C8#	56,0	O	/
C9#	55,7	O	/
C10#	55,8	O	/
<p>Note: D -Disassembly, R -Rupture, F-Fire, O- no disassembly, no rupture, no fire. 注: D- 解体; R- 破裂; F - 起火; O-无解体、无破裂、无起火。</p>			

Appendix 6

附表 6

Test Items 测试项目	Crush 挤压		
1,1	Test procedure 测试步骤		
	<p>A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1,5cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached.</p> <p>(a) The applied force reaches 13kN±0,78kN; (b) The voltage of the cell drops by at least 100 mV; or (c) The cell is deformed by 50% or more of its original thickness.</p> <p>Once the maximum pressure has been obtained, the voltage drops by 100mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released.</p> <p>电池芯或组成电池芯在两个平面间挤压。挤压在第一个接触点以约 1, 5cm/s 的速度慢慢进行，直到下面三个选项之一达到为止：</p> <p>(a) 作用力达到 13kN±0, 78kN; (b) 电池芯电压降至少达到 100mV; (c) 电池厚度和最初比较变形至少 50%。</p> <p>一旦达到最大压力，电压降超过 100 mV 或者电池芯变形超过 50%，压力应该解除。</p>		
1,2	Sample status 样品状态		
	C11#~C15#, at first cycle at 50% of the design rated capacity; C11#~C15#, 在第一个循环 50%的额定容量；		
1,3	Result 测试结果		
Sample No. 样品编号	Max. External Temperature 样品表面最高温度 (°C)	Test result 测试结果	Remark 备注
C11#	24,7	O	/
C12#	24,8	O	/
C13#	24,8	O	/
C14#	24,7	O	/
C15#	25,2	O	/
<p>Note: D -Disassembly, F-Fire, O- no disassembly, no fire. 注: D- 解体; F - 起火; O-无解体、无起火。</p>			

Appendix 7 附表 7

Test Items 测试项目	Overcharge 过度充电		
1,1	Test procedure 测试步骤		
	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 or 22V 如果厂家推荐的充电电压不超过 18V, 本测试的最小充电电压应该是两倍的厂家推荐的最大充电电压或者是 22V	The manufacturer's recommended maximum charge voltage is 4,25V. The manufacturer's recommended maximum continuous charge current is 400mA. The voltage of the test is 8,5V. And the Current is 800mA. 厂家推荐最大充电电压为 4, 25V, 厂家推荐最大充电电流为 400mA. 测试的电压为 8, 5V, 电流为 800mA。	
	When the manufacturer's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1,2 times maximum charge voltage 如果厂家推荐的充电电压超过 18V, 本测试的最小充电电压应该为 1, 2 倍的厂家推荐的最大充电电压	/	
1,2	Sample status 样品状态		
	C16#~C19#, at first cycle in fully charged states; C16#~C19#, 在第一个循环完全充电状态;		
	C20#~C23#, after 50 cycles ending in fully charged states; C20#~C23#, 在第五十个循环完全充电状态;		
1,3	Result 测试结果		
Sample No. 样品编号	Voltage Before test (V) 测试前开路电压 (V)	Test result 测试结果	Remark 备注
C16#	4,18	O	/
C17#	4,18	O	/
C18#	4,17	O	/
C19#	4,19	O	/
C20#	4,18	O	/
C21#	4,18	O	/
C22#	4,18	O	/
C23#	4,18	O	/
Note: D -Disassembly, F -Fire, O - no disassembly, no fire. 注: D - 解体; F - 起火; O -无解体、无起火。			

Appendix 8

附表 8

Test Items 测试项目	Forced discharge 强制放电				
1,1	Test procedure 测试步骤				
	Each cell shall be 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 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). 在 20±5℃的环境温度下, 将单个电芯连接在 12V 的直流电源上进行强制放电, 此直流电源提供每个电芯初始电流为制造厂指定的最大放电电流, 放电时间为额定容量除以初始电流。				
1,2	Sample status 样品状态				
	C24#~C33#, at first cycle in fully discharged states; C24#~C33#, 在第一个循环完全放电状态;				
	C34#~C43#, after 50 cycles ending in fully discharged states; C34#~C43#, 在第五十个循环完全放电状态;				
1,3	Result 测试结果				
Sample No. 样品编号	Voltage Before test 测试前开路电压 (V)	Test result 测试结果	Sample No. 样品编号	Voltage Before test 测试前开路电压 (V)	Test result 测试结果
C24#	3,275	○	C34#	3,267	○
C25#	3,261	○	C35#	3,272	○
C26#	3,272	○	C36#	3,254	○
C27#	3,249	○	C37#	3,265	○
C28#	3,255	○	C38#	3,260	○
C29#	3,256	○	C39#	3,256	○
C30#	3,261	○	C40#	3,268	○
C31#	3,260	○	C41#	3,260	○
C32#	3,253	○	C42#	3,251	○
C33#	3,266	○	C43#	3,263	○
Note: D -Disassembly, F -Fire, ○ - no disassembly, no fire. 注: D - 解体; F - 起火; ○ -无解体、无起火。					

注 意 事 项

Important

1. 本报告无检验单位检验专用章、骑缝章无效。
The test report is invalid without the special seal for testing and Paging seal of Guangzhou MCM Certification and Testing Co., Ltd.
2. 未经本试验室书面同意，不得部分地复制本报告。
Nobody is allowed to photocopy or partly photocopy this test report without written permission of Guangzhou MCM Certification and Testing Co., Ltd.
3. 本报告无批准人、审核人及检测人签名无效。
The test report is invalid without the signatures of Approver, Checker and Tester.
4. 本报告涂改无效。
The test report is invalid if altered.
5. 对检验报告若有异议，应于收到报告之日起十五天内向检验单位提出。
Objections to the test report must be submitted to Guangzhou MCM Certification and Testing Co., Ltd. Within 15 days.
6. 本报告中以逗号代替小数点。
Throughout this report a comma is used as the decimal separator.
7. 本报告仅对来样负责。
The test report is valid for the tested samples only.

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