





中国认可 国际互认 检测 TESTING CNAS L0095

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No.: RZUN2018-3092

检测报告 TEST REPORT

UN38.3

NAME OF SAMPLE:	Lithium ion Rechargeable Cell	
产品名称:	-	
	V	
CLIENT:	CHANGDE YIKLIK ENERGY LIMITED	
委托单位:	常德毅力能源有限公司	
CLASSIFICATION OF TEST:	Commission Test	
检测类别:	委托测试	



检测报告

TEST REPORT

No.: RZUN2018-3092

Page 2 of 13 Pages

Name of samples: Lithium ion Rechargeable Cell 样品名称:- Color: Green 样品颜色:绿色 Commissioned by: CHANGDE YIKLIK ENERGY LIMITED 委托单位:常德毅力能源有限公司 Commissioner address: Southern DongTing Avenue, ChangLingZhou Community, ShenLiu Town, AnXiang County, HuNan Province, P.R.China (inside Industrial Park) 生产单位地址:湖南省安乡县深柳镇长岭洲社区洞庭大道南段(工业园区内) Classification of test: Commission Test 检测类别: 委托测试 Classification of test: Commission Test 检测类别: 委托测试 Tested according to:测试标准: ST/SG/AC.10/11/Rev.6/Amend.1/Section 38.3 Receiving date: 接样日期: 2018-10-25 Completing date: 完成日期: 2018-11-16		
样品颜色:绿色 样品形狀: 圆桂形 Commissioned by: CHANGDE YIKLIK ENERGY LIMITED 委托单位: 常德毅力能源有限公司	The first state of the first sta	型号规格: NCR18650A335
Edminissioned by: CHANGDE YIKLIK ENERGY LIMITED 委托单位: 常德毅力能源有限公司 Commissioner address: Southern DongTing Avenue, ChangLingZhou Community, ShenLiu Town, AnXiang County, HuNan Province, P.R.China (inside Industrial Park) 委托单位地址: 湖南省安乡县深柳镇长岭洲社区洞庭大道南段(工业园区内) Classification of test: Commission Test 检测类别: 委托测试 Tested according to: 测试标准: ST/SG/AC.10/11/Rev.6/Amend.1/Section 38.3 Receiving date: 接样日期: 2018-10-25 LIMITED 生产单位: 常德毅力能源有限公司 Manufacturer address: Southern DongTing Avenue, ChangLingZhou Community, ShenLiu Town, AnXiang County, HuNan Province, P.R.China (inside Industrial Park) 生产单位地址: 湖南省安乡县深柳镇长岭洲社区洞庭大道南段(工业园区内) Quantity of sample: 40 cells 样品数量: 40 个电芯 Sample identification: 样品标识序号: c1#~c40# Means of receiving: Submitted by commissioner 接样方式: 委托单位送样 Completing date: Test item: 7 items		
Control Solution address. Southern Dong Ting Avenue, ChangLingZhou Community, ChangLingZhou Community, ShenLiu Town, AnXiang County, HuNan Province, P.R.China (inside Industrial Park) 委托单位地址: 湖南省安乡县深柳镇长岭洲社区洞庭大道南段(工业园区内) Classification of test: Commission Test 检测类别: 委托测试 Tested according to: 测试标准: ST/SG/AC.10/11/Rev.6/Amend.1/Section 38.3 Receiving date: 接样日期: 2018-10-25 Completing date: 在 Southern Dong Ting Avenue, ChangLingZhou Community, ShenLiu Town, AnXiang County, HuNan Province, P.R.China (inside Industrial Park) 生产单位地址: 湖南省安乡县深柳镇长岭洲社区洞庭大道南段(工业园区内) Quantity of sample: 40 cells 样品数量: 40 个电芯 Sample identification: 样品标识序号: c1#~c40# Means of receiving: Submitted by commissioner 接样方式: 委托单位送样 Completing date: Test item: 7 items		LIMITED
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测试标准: ST/SG/AC.10/11/Rev.6/Amend.1/Section 38.3 样品标识序号: c1#~c40# Receiving date: 接样日期: 2018-10-25 Completing date: Test item: 7 items	THE REPORT OF THE PROPERTY OF	
接样日期: 2018-10-25 by commissioner 接样方式: 委托单位送样 Completing date: Test item: 7 items		
		by commissioner

Test conclusion:

检测结论:

The Lithium ion Rechargeable cells submitted by CHANGDE YIKLIK ENERGY LIMITED are tested according to Section 38.3 of the Sixth revised Edition Amendment 1 of the Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (ST/SG/AC.10/11/Rev.6/Amend.1/Section 38.3). The test items are full items. The test results comply with the relevant requirements of the standard.

由常德毅力能源有限公司送检的 Lithium ion Rechargeable Cell,依据《关于危险货物运输的建议书》试验和标准手册第六修订版修正 1 第 38.3 节进行检测,试验为全项目,测试结果符合标准相关要求。



Title:

批准人职务:

Manager 经理

Approved by:

Reviewed by:

Tested by:

批准:

Sin George

审核:

Zhang Sigon

检测:

Wei Guahua

Description and illustration of the sample:

样品说明及描述:

The sample's status is good

样品状况良好。

Test item 测试项目	Sample No. 样品编号	State 状态	Remark 备注
	c1#~c5#	at first cycle, in fully charged states 第一个交替充电放电周期完全充电状态	
T.1~T.5 c6#~c10#		after 25 cycles ending in fully charged states 第 25 个交替充电放电周期完全充电状态	AIV
TO	c11#~c15#	at first cycle at 50% of the design rated capacity 第一个交替充电放电周期充电到设计额定容量的 50%	35
Т.6	c16#~c20#	after 25 cycles ending at 50% of the design rated capacity 第 25 个交替充电放电周期充电到设计额 定容量的 50%	-
	c21#~c30#	at first cycle, in fully discharged states 第一个交替充电放电周期完全放电状态	-
Т.8	c31#~c40#	after 25 cycles ending in fully discharged states 第 25 个交替充电放电周期完全放电状态	-

Description of the deviation from the standard, if any: 测试结果不符合标准项的说明:

1

Remarks:

备注:

Throughout this report a comma is used as the decimal separator. 本报告中以逗号代替小数点。

Photos of Samples and Labels/样品照片及标识

Cell/电芯 (NCR18650A335 3,6V 3350mAh)





38.3.4.1 2 Open circuit voltage not less than 90%, The requirement venting,	S P
Test 1: Altitude simulation/测试 1: 高度模拟 Test cells and batteries shall be stored at a pressure of 11,6kPa or less for at leasix hour at ambient temperature (20±5℃)/ 将电芯和电池在温度为 20±5℃,大气力为不大于 11,6kpa 的环境中贮存不少于 6 个小时 Requirement/标准要求: 1 Cells and batteries Mass loss limit: ≤0,2% /样品质量损失 ≤0,2% 2 Open circuit voltage not less than 90%, The requirement relating to voltage is not applicable to test cells and batteries at full discharged states. 样品试验后开路电压应不低于试验前开路电压的 90%,此要求不适用于完全放完电的电池和电芯。 2 No leakage, venting, disassembly, rupture and no fit 编号为 c1#~c10#样品: 无漏液、无气、无解体、无破气、无解体、无破气、无解体、无破	S P
Test cells and batteries shall be stored at a pressure of 11,6kPa or less for at leasix hour at ambient temperature (20±5℃)/ 将电芯和电池在温度为 20±5℃,大气力为不大于 11,6kpa 的环境中贮存不少于 6 个小时 Requirement/标准要求: 1 Cells and batteries Mass loss limit: ≤0,2% /样品质量损失 ≤0,2% 2 Open circuit voltage not less than 90%, The requirement relating to voltage is not applicable to test cells and batteries at full discharged states. 样品试验后开路电压应不低于试验前开路电压的 90%,此要求不适用于完全放完电的电池和电芯。 2 Notation and batteries shall be stored at a pressure of 11,6kPa or less for at leasix hour at least new least new less for at leasix hour at least new less for at leasix hour at least new less for at leasix new less for at least new less for at leasix hour and least new less for at least new l	S P
six hour at ambient temperature (20±5℃) / 将电芯和电池在温度为 20±5℃,大气力为不大于 11,6kpa 的环境中贮存不少于 6 个小时 Requirement/标准要求: 1 Cells and batteries Mass loss limit: ≤0,2% /样品质量损失≤0,2% 2 Open circuit voltage not less than 90%, The requirement relating to voltage is not applicable to test cells and batteries at full discharged states. 样品试验后开路电压应不低于试验前开路电压的 90%,此要求不适用于完全放完电的电池和电芯。 2 Notation (20±5℃,大气力,大气力,大气力,大气力,大气力,大气力,大气力,大气力,大气力,大气力	S P
1 Cells and batteries Mass loss limit: ≤0,2% /样品质量损失 ≤0,2% 2 Open circuit voltage not less than 90%, The requirement relating to voltage is not applicable to test cells and batteries at full discharged states. 样品试验后开路电压应不低于试验前开路电压的 90%,此要求不适用于完全放完电的电池和电芯。 2 Notation of the control of the	P P
no fire 样品(电池)应无漏液、无排气、无解体、无破裂以及无着火现象的发生 The data setable 1/数据见表 1	5
2 Open circuit voltage not less than 90%, The requirement venting,	et P

	ST/SG/AC.10/11/Rev.6/Amend.1/Section 38.3					
Clause 章节	Requirements Result 标准要求 测试结果					
	Test 3: Vibration/测试 3: 振动	CONTENT OF THE PARTY OF THE PAR	A Nº			
	1 Cells and batteries are firmly secured to the platform of th 芯和电池牢固地安装在振动台(的台面)上	e vibration machine /电				
	2 The vibration: a sinusoidal waveform with a logarithmic sv 200Hz and back to 7Hz traversed in 15 minutes/振动以正至 200Hz,然后在减少回到 7Hz 为一个循环,一个循环持续送。	弦波形式,以7Hz增加				
	3 For cells and small batteries: from 7 Hz a peak acceleration until 18Hz is reached. The amplitude is then maintained a excursion) and the frequency increased until a peak acceleration of 8g _n is the frequency is increased to 200Hz. / 对于电芯和小型电池: 峰值加速度保持不变,直到达到 18Hz。然后将振幅保1.6mm)并且频率增加直到出现 8g _n 的峰值加速度(大约 50峰值加速度,直到频率增加到 200Hz。	at 0.8mm (1.6mm total eleration of 8g _n occurs in maintained until the 从7Hz开始,以1g _n 的 持在 0.8mm(总偏移				
38.3.4.3	For large batteries: from 7Hz a peak acceleration of 1g _n is maintained until 18Hz is reached. The amplitude is then maintained at 0.8mm (1.6mm total excursion) and the frequency increased until a peak acceleration of 2g _n occurs (approximately 25Hz). A peak acceleration of 2g _n is then maintained until the frequency is increased to 200Hz. / 对于大型电池: 从 7Hz 开始,以 1g _n 的峰值加速度保持不变,直到达到 18Hz。然后将振幅保持在 0.8mm(总偏移 1.6mm)并且频率增加直到出现 2g _n 的峰值加速度(大约 25Hz)。然后保持 2g _n 的峰值加速度,直到频率增加到 200Hz。					
	4 This cycle repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting position of the cell. One of the directions of vibration must be perpendicular to the terminal face. /以振动的其中一个方向必须是垂直样品极性,对每个电芯从三个互相垂直的方向上循环 12 次,每个方向 3 个小时,共 9 小时。					
	Requirements/标准要求	The samples				
	1 Cells and batteries Mass loss limit: ≤0,2% /样品质量损失 ≤0,2%	c1#~c10# : No leakage, no				
	2 Open circuit voltage not less than 90%, The requirement relating to voltage is not applicable to test cells and batteries at full discharged states.	venting, no disassembly, no rupture and no fire/编号为 c1#~c10#的				
<u>/</u>	样品试验后开路电压应不低于试验前开路电压的 90%,此要求不适用于完全放完电的电池和电芯。 3 No leakage, no venting, no disassembly, no rupture and no fire	样品:无漏液、无排气、无解体、无破裂以及无着火现象				
QL'	样品(电池)应无漏液、无排气、无解体、无破裂以及无着 火现象的发生	The data see table1/数据见表 1				

01	ST/SG/AC.10/11/Rev.6/Amend.1/Section		Verdict		
Clause	Requirements Result				
章节	标准要求	测试结果	判定		
	Test 4: Shock/测试 4: 冲击				
	1 Test cells and batteries shall be secured to the testing ma 定住每个电芯和电池样品的全部配件表面。	achine/以稳固的托架固			
	2 Each cell shall be subjected to a half-sine shock of peak and pulse duration of 6 milliseconds. Large cells may be s shock of peak acceleration of 50 gn and pulse duration of 个电芯以峰值为 150gn 的半正弦的加速度撞击,脉冲持续 6 最大加速度 50gn 和脉冲持续时间 11 毫秒的半正弦波冲击。	ubjected to a half-sine 11 milliseconds. / 对每			
	Small batteries shall be subjected to a half-sine shock of pe				
	g_n (or Acceleration(g_n)= $\sqrt{\frac{100850}{mass}}$, which is smaller) and	d pulse duration of 6			
	milliseconds, large batteries shall be subjected to a half-sin	e of peak acceleration			
38.3.4.4	of 50 g _n (or Acceleration(g _n)= $\sqrt{\left(\frac{30000}{mass}\right)}$, which is smaller)	and pulse duration of			
	11 milliseconds/对每个电池以峰值为 150g _n (或与 $\sqrt{\frac{100850}{mass}}$	中的较小值)的半正			
	弦的加速度撞击,脉冲持续 6 毫秒,大型电池须经受最				
	$\sqrt{\frac{30000}{mass}}$ 中的较小值)和脉冲持续时间 11 毫秒的半正弦波	冲击。	Р		
	3 Each cell or battery shall be subjected to three shocks in followed by three shocks in the negative direction of three mounting positions of the cell or battery for a total of 18 sho须在三个互相垂直的电池安装方位的正方向经受三次冲击,冲击,总共经受 18 次冲击。	mutually perpendicular ocks/每个电池或电池组	ŗ		
	Requirements/标准要求: 1 Cells and batteries Mass loss limit: ≤0,2% /样品质量损失	The samples c1#~c10#:			
	≤0,2% 2 Open circuit voltage not less than 90%, The requirement	Acceleration= 150g _n			
	relating to voltage is not applicable to test cells and batteries at full discharged states.	No leakage, no venting, no			
	样晶试验后开路电压应不低于试验前开路电压的 90%,此要求不适用于完全放完电的电池和电芯。 3 No leakage, no venting, no disassembly, no rupture and no fire	disassembly, no rupture and no fire/ 编号为 c1#~c10#的 样品:			
	样品(电池)应无漏液、无排气、无解体、无破裂以及无着	峰值加速度= 150gn			
4	火现象的发生	无漏液、无排气、无 解体、无破裂以及无 着火现象			
		The data see table1/数据见表 1			

	ST/SG/AC.10/11/Rev.6/Amend.1/Section	38.3				
Clause 章节						
	Test 5: External Short Circuit/测试 5:外部短路					
	1The cell or battery to be tested shall be temperature stabilicase temperature reaches 57±4℃/保持试验环境温度稳定在电池样品外表温度达到 57±4℃					
38.3.4.5	2 the cell or battery shall be subjected to a short circuit external resistance of less than 0,1 ohm at 57±4°C, This sicontinued for at least one hour after the cell or battery external returned to 57±4°C/将样品正负极用小于 0,1Ω 的总电阻外表温度恢复到 57±4°C之后保持短路状态 1 小时以上。	nort circuit condition is ernal case temperature				
	3 the cell or battery must be observed for a further six hour for the test to be concluded,					
	/对电芯或电池必须进一步观察 6 个小时才能下结论。					
	Requirements/标准要求: During the test and within six hours after test ,the cells or batteries 在测试过程中以及之后 6 个小时内,电芯或电池样品	The samples c1#~c10#:				
	1. External temperature not exceed 170℃ 外表温度不超过 170℃	rupture and no fire/ 编号为 c1#~c10#的 样品: 无解体、无破				
	2. No disassembly, no rupture and no fire. 无解体、无破裂和无着火现象发生。	製以及无着火现象 The data see table1/数据见表 1				

	ST/SG/AC.10/11/Rev.6/Amend.1/Section	Result	Verdict
Clause 章节	Requirements 标准要求	Nesuit 测试结果	判定
######################################	Test 6: Impact / Crush / 测试 6: 撞击/挤压		Р
	Impact (applicable to cylindrical cells not less than 18mm in 6 撞击 (适用于直径不小于 18 毫米的圆柱形电池)	diameter) /	
	1 This test sample cell or component cell is to be placed on 将试验样品用的电芯或聚合物电芯放在一个平坦光滑的平面上	117	
	2 A 15,8 mm diameter bar is to be placed across the ce 9,1kg mass is to be dropped from a height of 61±2,5cm onto 为 15,8mm 的横木横过电池中部放置后,将一质量为 9,1kg i 高度落向样品。	the sample./将一直径	
	3 The test sample is to be impacted with its longitudinal a surface and perpendicular to the longitudinal axis of the diameter curved surface lying across the centre of the test is to be subjected to only a single impact./ 接受撞击的试样,平行并与横放在试样中心的直径 15,8±0,1 毫米弯曲表面的纵线经受一次撞击。	e 15,8 mm ± 0,1mm l sample. Each sample . 纵轴应与平坦的表面	P
	Requirements/标准要求: 1 Cells external temperature not exceed 170℃.电芯或电池的最高表面温度应不超过 170℃ 2 No disassembly, no fire within six hours of this test 试验结束后 6 个小时之内,电芯和聚合物电芯应无解体和无	The samples c11#~c20#: no disassembly and no fire/ 编 号 为 c11#~c20#的样品:	
20040	着火现象发生	无解体、无着火现象 The data see table2/数据见表 2	
38.3.4.6	Crush (applicable to prismatic, pouch, coin/button cells and than 18mm in diameter) / 挤压(适用于棱柱形、袋装、硬币/纽扣电池和直径小于 18 1 A cell or component cell is to be crushed between the crushing is to be gradual with a speed of approximately 1,5 of contact. The crushing is to be continued until the first of the contact.	毫米的圆柱形电池) wo flat surfaces. The cm/s at the first point ne three options below	
	is reached. / 将电池或元件电池放在两个平面之间挤压,挤一个接触点上的速度大约为 1,5 厘米/秒。挤压持续进行,直: (a) The applied force reaches 13 kN ± 0,78 kN. / 施加的力达(b) The voltage of the cell drops by at least 100 mV,/电池的F(c) The cell is deformed by 50% or more of its original thick 厚度的 50%以上。	到出现以下三种情况之到 13 千牛±0,78 千牛 电压下降至少 100 毫伏	N/A
	2. A prismatic or pouch cell shall be crushed by applying t side. A button/coin cell shall be crushed by applying the for For cylindrical cells, the crush force shall be applied longitudinal axis. /棱柱形或袋装电池应从最宽的一面施压。终平坦表面施压。圆柱形应从与纵轴垂直的方向施压。	ce on its flat surfaces. perpendicular to the	
	Requirements/标准要求: 1 Cells external temperature not exceed 170℃.电芯或电池的最高表面温度应不超过 170℃ 2 No disassembly, no fire within six hours of this test	-	
	试验结束后 6 个小时之内,电芯和聚合物电芯应无解体和无 着火现象发生		

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Ref. No.: RZ	ZUN2018-3092 ST/SG/AC.10/11/Rev.6/Amend.1/Section	Page 10 o n 38.3	i is rage			
Clause 章节	Requirements Result 标准要求 测试结果					
38.3.4.7	Test 7: Overcharge/测试 7: 过充电 1 The charge current shall be twice the manufacturer's recontinuous charge current/以 2 倍制造厂推荐的最大持续充2 The minimum voltage of the test shall be as follows/本测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/ 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是厂家标定最大充电电压的两倍或者是 22V 之中的较小者。 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/ 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是厂家标定最大充电电压的 1,2 倍。 3 Tests are to be conducted at ambient temperature 20±5℃, The duration of the test shall be 24 hours/20±5℃的环境温度下,试验持续 24 小时。 Requirements/标准要求: No disassembly and no fire within seven days of this test	电电流对样品充电]试最小电压为: e	N/A			
38.3.4.8	试验样品在试验中和试验后 7 天内,应无解体和无着火现象 发生。 Test 8: Forced discharge/测试 8: 强制放电 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, 20±5℃的环境温度下,将单个电芯连接在 12V 的直流电流流电源提供给每个电芯初始电流为制造厂指定的最大放电电 The specified discharge current is to be obtained by connet the appropriate size and rating in series with the test cell. It discharged for a time interval (in hours) equal to its rated continuital test current (in ampere) 指定的放电电流通过串联在测试电芯上的合适大小和功率的强制放电时间(小时)为额定容量除以初始电流(安培) Requirements/标准要求: No disassembly and no fire within seven days of this test 试验样品在试验中和试验后 7 天内,应无解体和无着火现象发生。	ecting a resistive load of Each cell shall be forced capacity divided by the	P			

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				Table2	Table2: Impact / 表 2:	2. 婚击					
***************************************	Sample No. 样品号	C11#	c12#	c13#	c14#	c15#	c16#	c17#	c18#	c19#	c20#
Test 6: Impact/测	OCV prior to test / 试验前电压(V)	3,634	3,633	3,634	3,633	3,634	3,634	3,634	3,633	3,633	3,634
试 6: 撤击	Temp. (°C) 額度 (°C)	26,8	27,1	26,5	26,9	26,7	27,2	27,0	26,8	26,5	26,9
			Tal	Table 3: Forced discharge / 表 3. 强削放电	d discharge	/表3.强制	放电				
	Sample No. 样品号	c21#	c22#	c23#	c24#	c25#	c26#	c27#	c28#	c20#	#0£0

	c30#	3,391	c40#	3,391
	c20#	3,393	c39#	3,392
	c28#	3,392	c38#	2,393
	c27#	3,393	c37#	3,393
炎电	c26#	3,392	c36#	3,392
Forced discharge / 表 3. 强制放电	c25#	3,391	c35#	3,391
ed discharge	c24#	3,392	c34#	3,391
Table 3: Force	c23#	3,391	c33#	3,392
Ta	c22#	3,391	c32#	3,393
	c21#	3,392	c31#	3,392
	Sample No. 样品号	OCV prior to test / 试验前电压(V)	Sample No. 样品号	OCV prior to test / 试验前电压(V)
	Test 8: Forced discharge / 瀏试 8: 强 制放电			

注意事项 Important

1. 报告无检测单位印章无效。

The test report is invalid without the official stamp of CVC.

- 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 CVC.
- 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 Ratifier, Reviewer and Testing engineer.
- 4. 本报告涂改无效。

The test report is invalid if altered,

5. 对检测报告若有异议,应于收到报告之日起十五天内向检测单位提出。

Objections to the test report must be submitted to CVC within 15 days,

6. 本报告仅对送检样品负责。

The test report is valid for the tested samples only.

7. 判定栏中"-"表示"不需要判定", "P"表示"通过", "F"表示"不通过", "N/A"表示"不适用"。

As for the Verdict, "-" means "no need for judgement", "P" means "pass", "F" means "fail" and "N/A" means "not applicable".

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