

SWY 18650 1.5Ah 15C Product Performance Introduction

Shineway

浙江深伟业 科技有限公司



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Parameter Overview

Type			SWY 18650 1.5Ah 15C	
●	Capacity@0.2C	Nominal	1500	mAh
●		Minimum	1450	mAh
●	AC.IR	Typical	15	mΩ
●	Nominal Voltage	0.2C	3.6	V
●	Voltage Range	Charge	4.2	V
●		Discharge	2.75	V
●	Charge Current	Standard	0.75	A
		Rapid	1.5	A
●	Temperature Condition (Cell Surface)	Charge	0~50	°C
		Discharge	-20~80	°C
●	Discharge Current	Standard	0.75	A
		Max. Continuous	22.5	A
●	Cycle	1.5A/20A(2.75-4.2V)	80%@300	cycles
●	Weight	Typical	40±2	g
●	GED	0.2C	129	Wh/kg
●	ED	0.2C	309	Wh/L

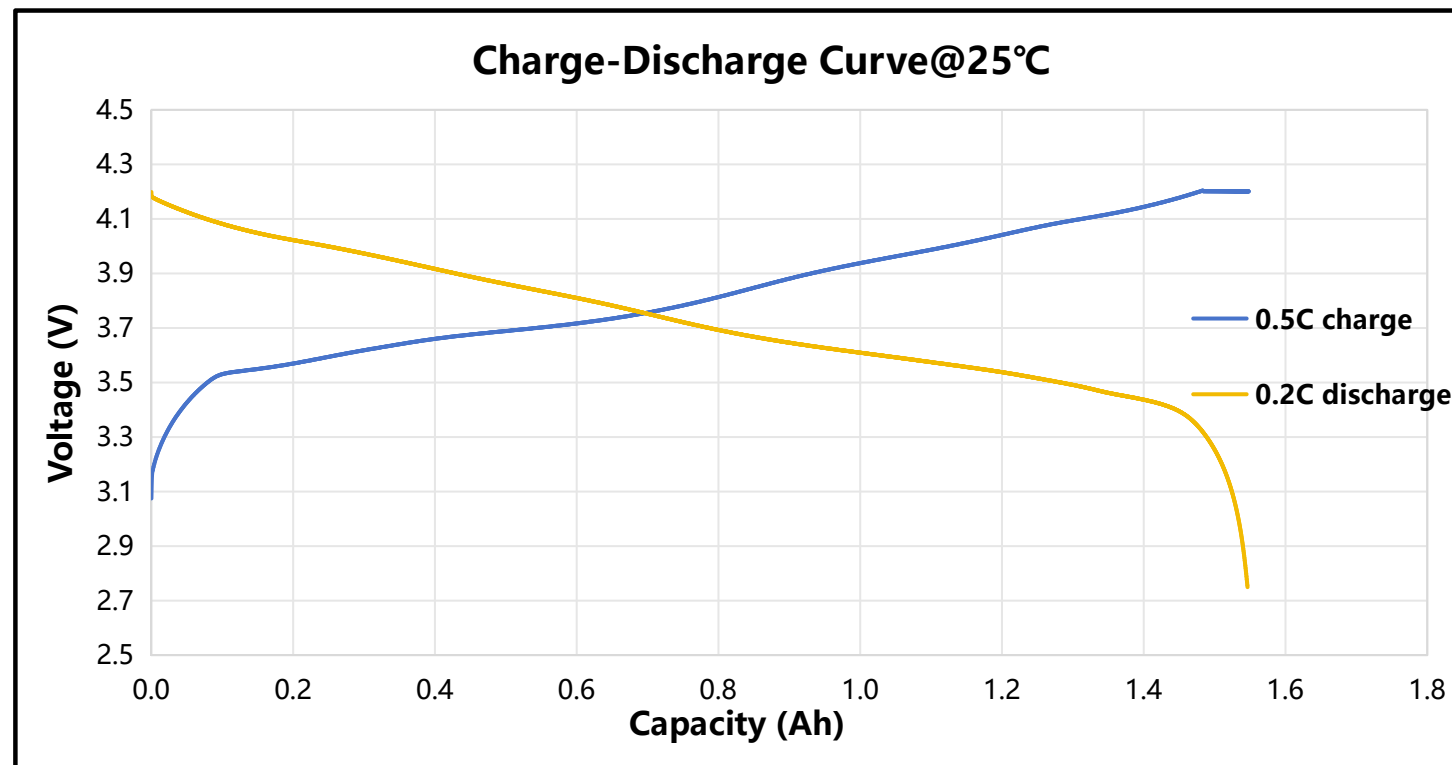
02

Electrical performance

Capacity@0.2C

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

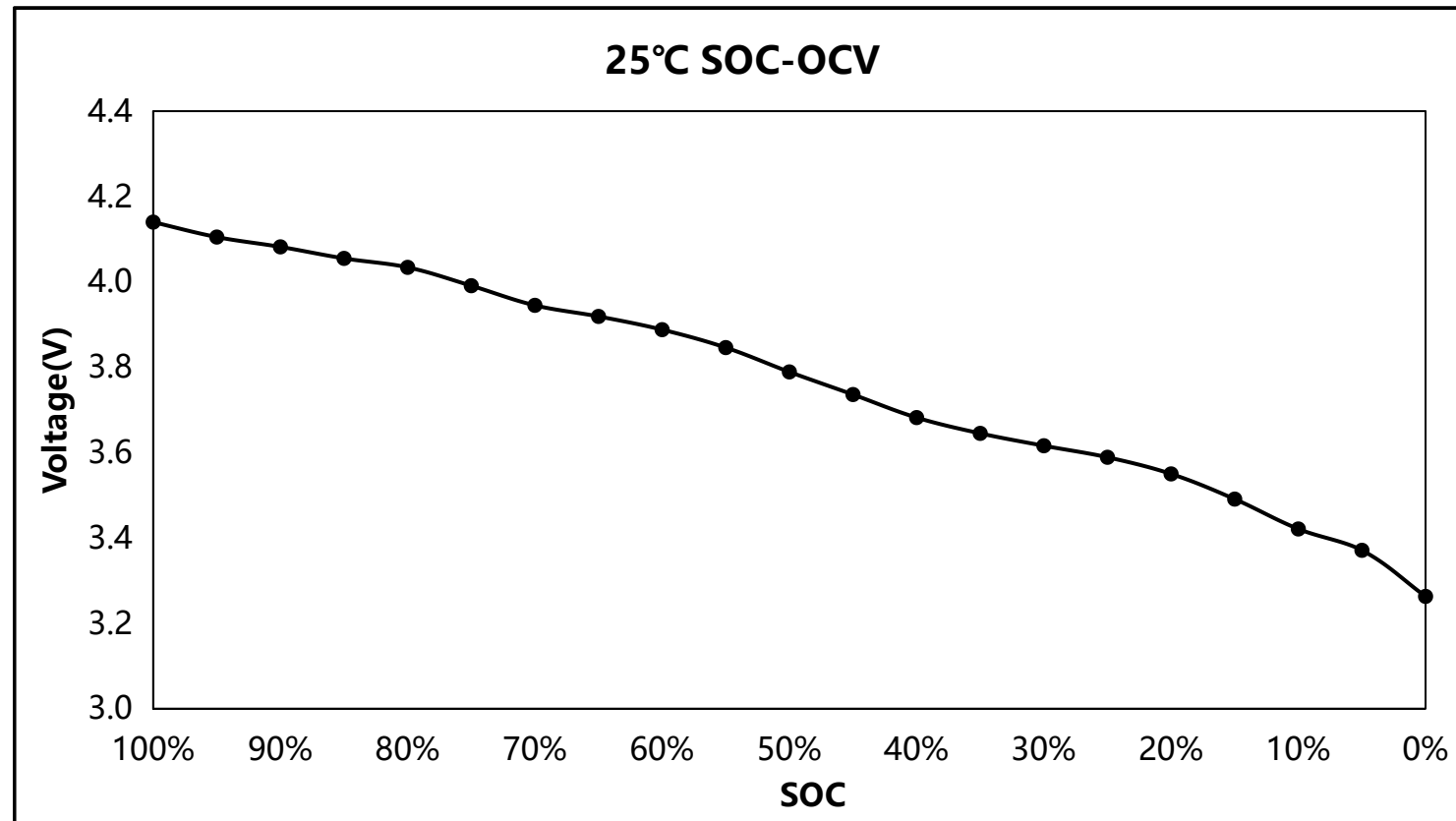
Discharge: CC(0.2C) to 2.75V



Discharge SOC-OCV @25°C

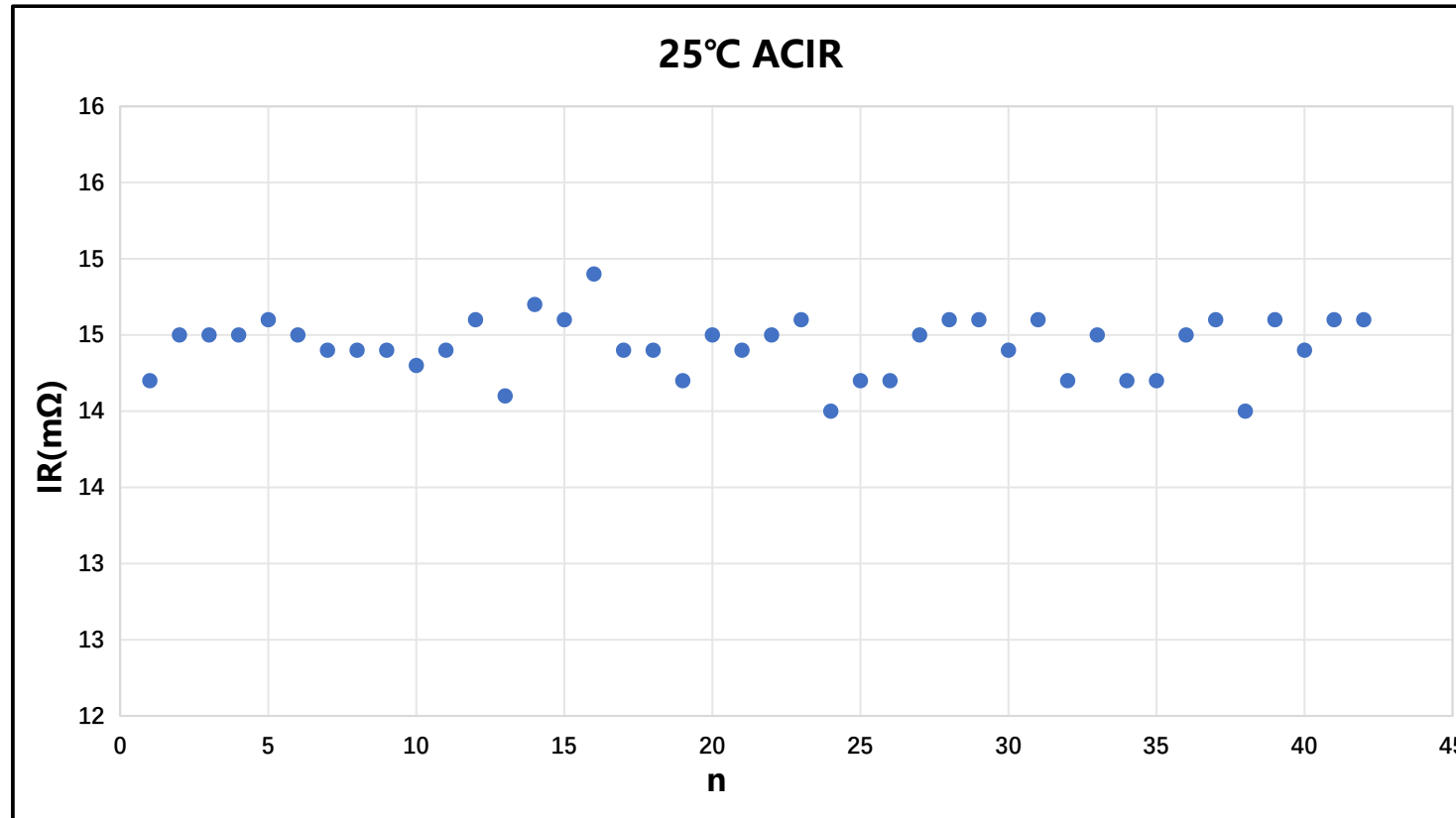
Charge: CC(0.2C) to 4.2V, CV(4.2V) to 0.02C @ 25°C

Discharge: CC(0.2C) 5 % capacity@ 25°C, rest for 24h and take OCV, until voltage $\leq 2.5V$



ACIR@25°C

ACIR at 25°C: 1kHz

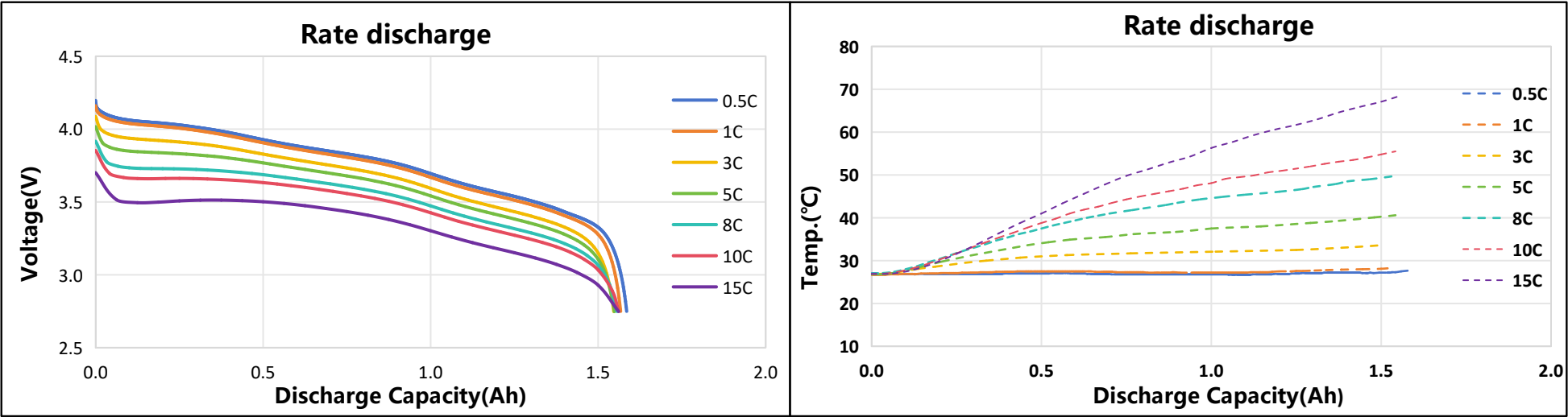


● Rate Discharge

Rate Discharge @25°C

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

Discharge: CC(0.5C/1C/2C/3C/5C/8C/10C/15C) to 2.5V

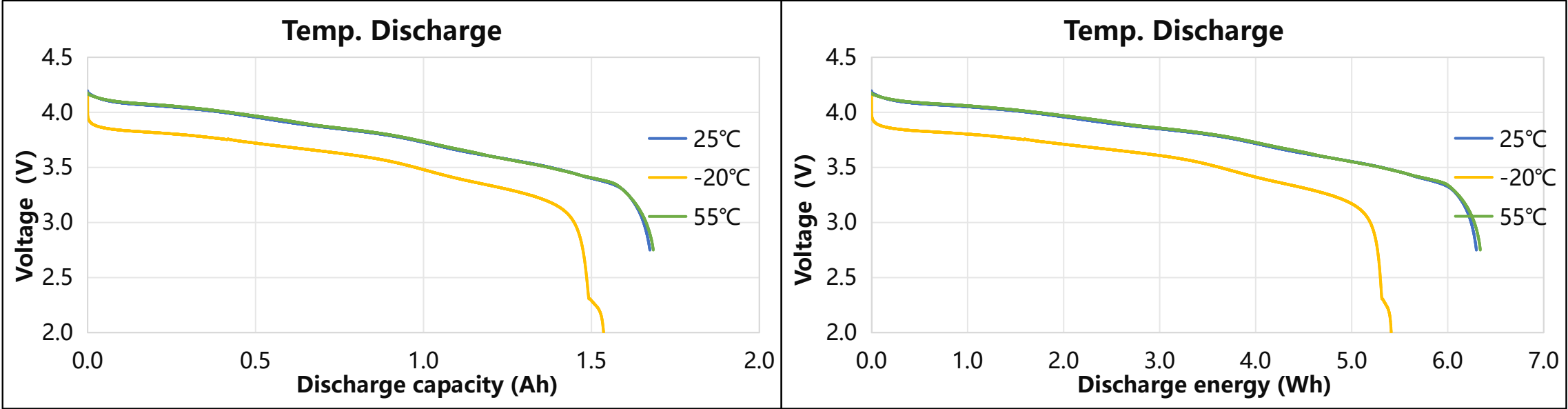


Rate Discharge							
Item	0.5C	1C	3C	5C	8C	10C	15C
Discharge Capacity (Ah)	1.585	1.567	1.547	1.548	1.556	1.562	1.564
Discharge Capacity (%)	100.0%	98.9%	97.6%	97.7%	98.2%	98.5%	98.7%
Discharge Energy (Wh)	5.96	5.86	5.67	5.58	5.48	5.42	5.29
Max.Surface Temp. (°C)	27.9	29	34.4	41.3	50.8	57.3	66.4
Temp. Raise (°C)	0.9	2.3	7.6	14.5	23.8	30.4	39.4

Different Temp. Discharge @ 0.5C

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C @ 25°C

Discharge: CC(0.2C) to 2.75V @ (25°C/55°C), CC(0.2C) to 2.0V @ (-20°C)



Different Temp. Discharge			
Temperature (°C)	25°C	55°C	-20°C
Discharge Capacity (Ah)	1.674	1.684	1.536
Discharge Capacity (%)	100.0%	100.6%	91.8%
Discharge Energy (Wh)	6.30	6.34	5.41
Discharge Energy (%)	100.0%	100.7%	85.9%

Storage

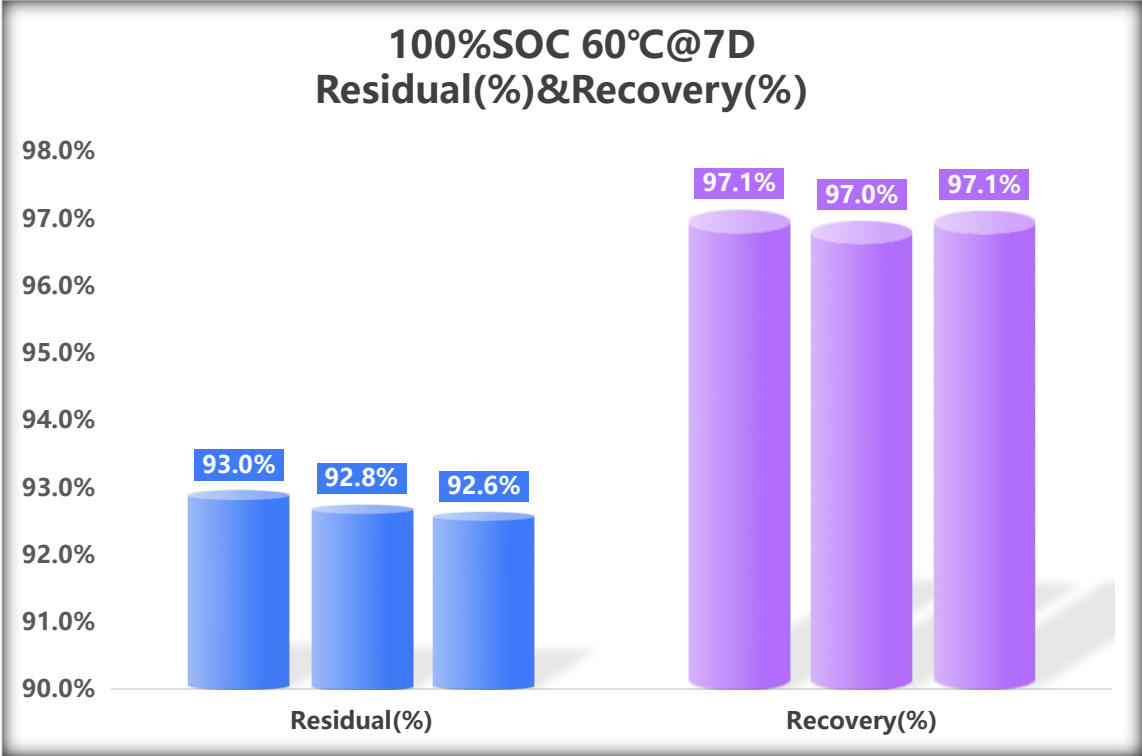
60°C Storage (100%SOC)

Charged at standard charge method, store the testing cells at 60±2°C for 7 days.

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

Discharge: CC(0.5C) to 2.75V

Item		1#	2#	3#
Before	IR(mΩ)	14.2	14.5	14.2
	Voltage(V)	4.177	4.177	4.176
	Capacity(Ah)	1.659	1.632	1.605
After	IR(mΩ)	15.0	15.2	14.8
	Voltage(V)	4.114	4.114	4.113
	Residual(Ah)	1.542	1.514	1.486
	Recovery(Ah)	1.612	1.583	1.558
Residual(%)		93.0%	92.8%	92.6%
Recovery(%)		97.1%	97.0%	97.1%



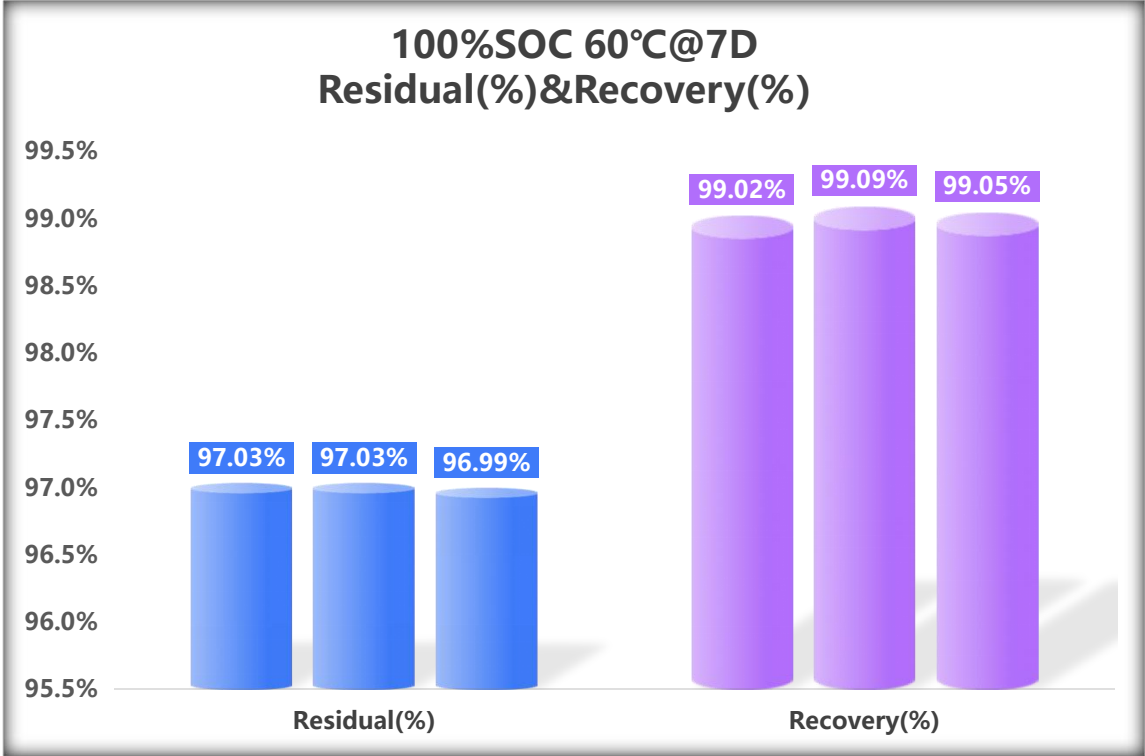
25°C Storage (100%SOC)

Charged at standard charge method, store the testing cells at 25±2°C for 28 days.

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

Discharge: CC(0.5C) to 2.75V

Item		1#	2#	3#
Before	IR(mΩ)	14.2	14.3	14.3
	Voltage(V)	4.181	4.178	4.182
	Capacity(Ah)	1.671	1.675	1.666
After	IR(mΩ)	14.8	15.0	14.9
	Voltage(V)	4.137	4.136	4.149
	Residual(Ah)	1.621	1.626	1.616
	Recovery(Ah)	1.655	1.660	1.650
Residual(%)		97.0%	97.0%	97.0%
Recovery(%)		99.0%	99.1%	99.1%



85°C Storage (100%SOC)

Charged at standard charge method, store the testing cells at 85±2°C for 3 days.

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

NO.	Before		After		$\Delta IR(m\Omega)$	$\Delta V(V)$
	IR(m Ω)	Voltage(V)	IR(m Ω)	Voltage(V)		
1#	14.4	4.174	15.9	4.091	1.5	0.083
2#	14.6	4.172	15.9	4.090	1.3	0.082
3#	14.1	4.176	15.7	4.090	1.6	0.086
4#	14.7	4.178	15.9	4.090	1.2	0.088
5#	14.6	4.178	15.5	4.090	0.9	0.088
6#	14.9	4.174	16.0	4.090	1.1	0.084
7#	14.4	4.174	15.7	4.091	1.3	0.083
8#	14.4	4.173	16.0	4.091	1.6	0.082
9#	14.2	4.176	15.8	4.090	1.6	0.086
10#	14.5	4.175	15.9	4.090	1.4	0.085

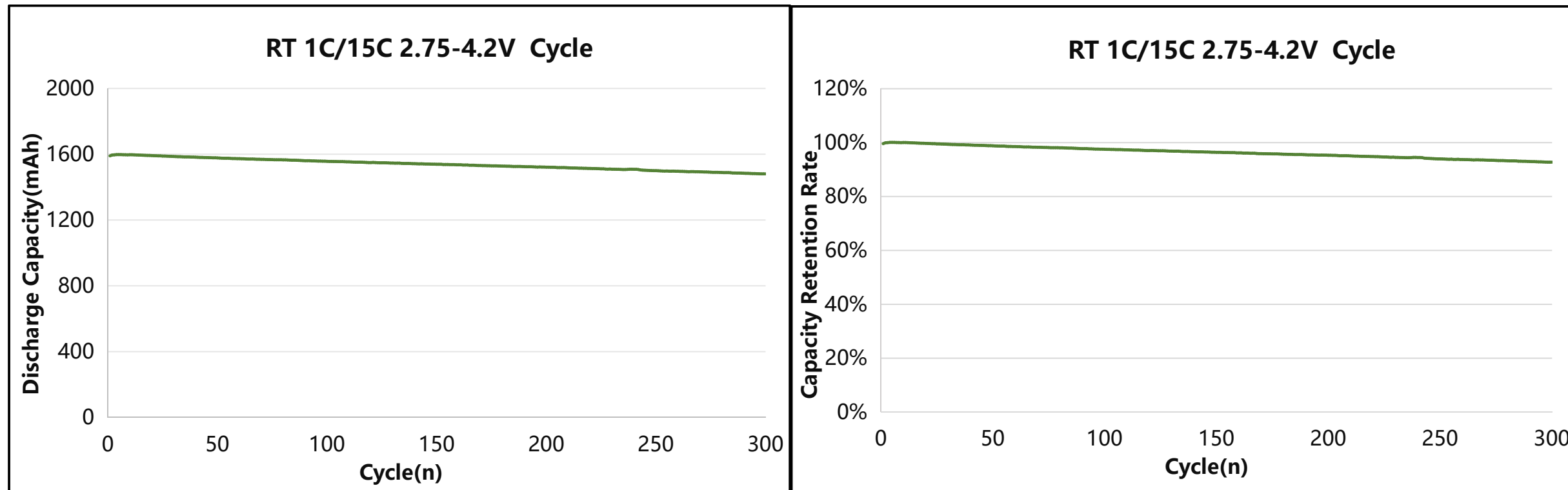
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Cycle Test

Cell Cycle @ 25°C

Charge: CC(1C) to 4.2V, CV(4.2V) to 0.05C

Discharge: CC(15C) to 2.75V

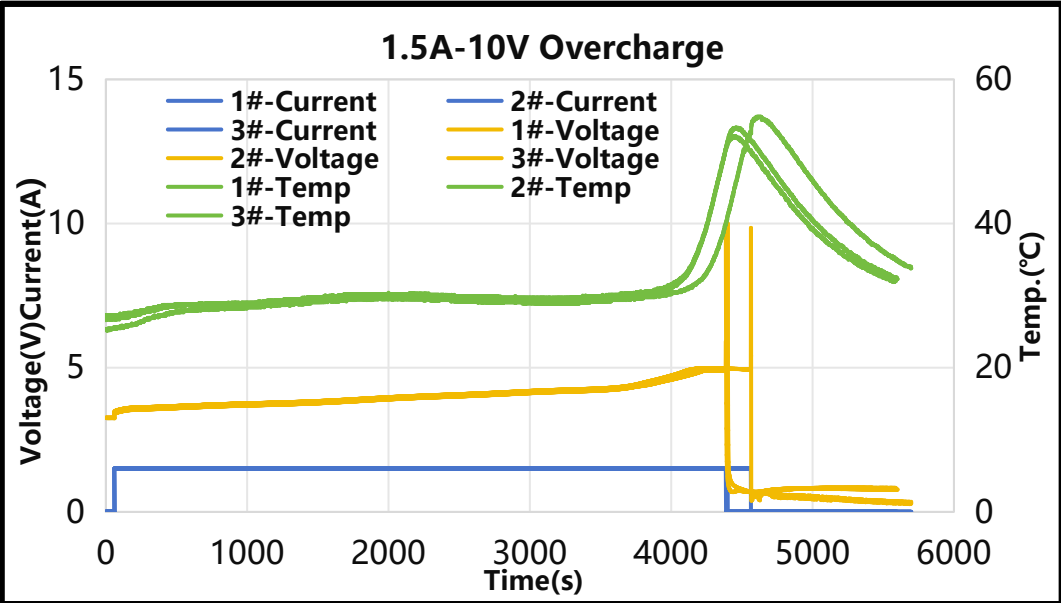


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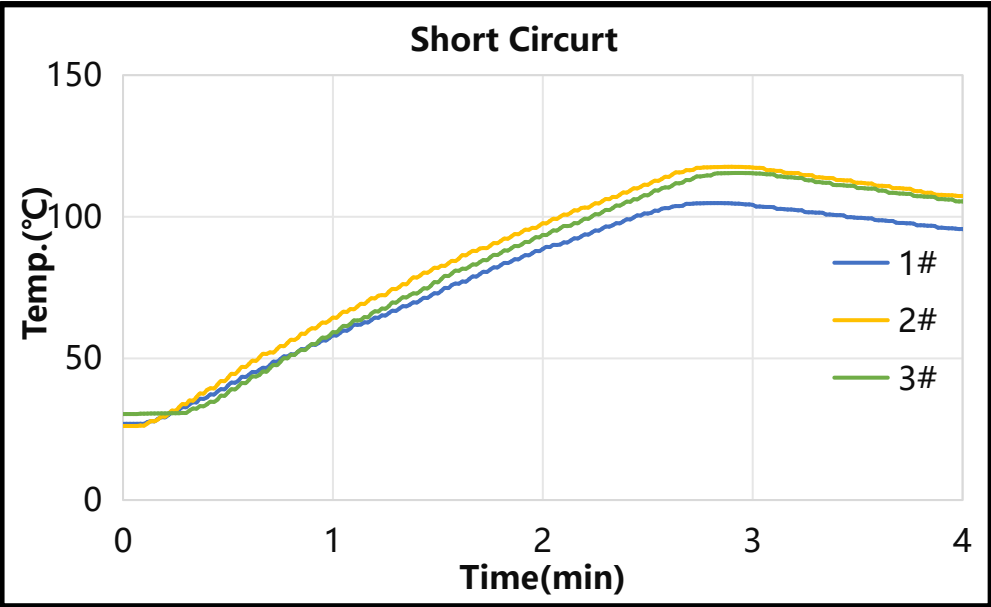
Safety Test

No.	Test Item	No.	Voltage Before Testing (V)	Max. Temp (°C)	Criterion	Result
1	1C 10V Over charge	1	3.261	53.3	No fire, No explosion	PASS
		2	3.282	52.1	No fire, No explosion	PASS
		3	3.271	54.8	No fire, No explosion	PASS
2	25°C 80mΩ Short Circuit	1	4.188	104.8	No fire, No explosion	PASS
		2	4.188	117.6	No fire, No explosion	PASS
		3	4.185	115.5	No fire, No explosion	PASS
3	130°C 30min Hot box	1	4.192	133.8	No fire, No explosion	PASS
		2	4.187	134.5	No fire, No explosion	PASS
		3	4.189	132.5	No fire, No explosion	PASS
4	Forced discharge	1	3.263	52.2	No fire, No explosion	PASS
		2	3.275	51.7	No fire, No explosion	PASS
		3	3.272	54.2	No fire, No explosion	PASS
5	Crush	1	4.187	24.8	No fire, No explosion	PASS
		2	4.187	24.7	No fire, No explosion	PASS
		3	4.184	24.9	No fire, No explosion	PASS
No.	Test Item	No.	Voltage Before Testing (V)	After Testing (V)	Criterion	Result
6	Free full	10 pcs	4.178-4.181	4.169-4.175	No fire, No explosion, No leakage	PASS

Overcharge (1C 10V) Cell State: 0%SOC (CC(0.5C) to 2.5V)					
Test: Cell CC charge at 1C to 10V until voltage at 10V or the time of charge to 90min					
Criterion: No fire, No explosion					
No.	OCV/V	IR/mΩ	Max. Temp./°C	Result	Judgment
1	3.261	14.4	53.3	No fire, No explosion	PASS
2	3.282	14.6	52.1	No fire, No explosion	PASS
3	3.271	14.6	54.8	No fire, No explosion	PASS

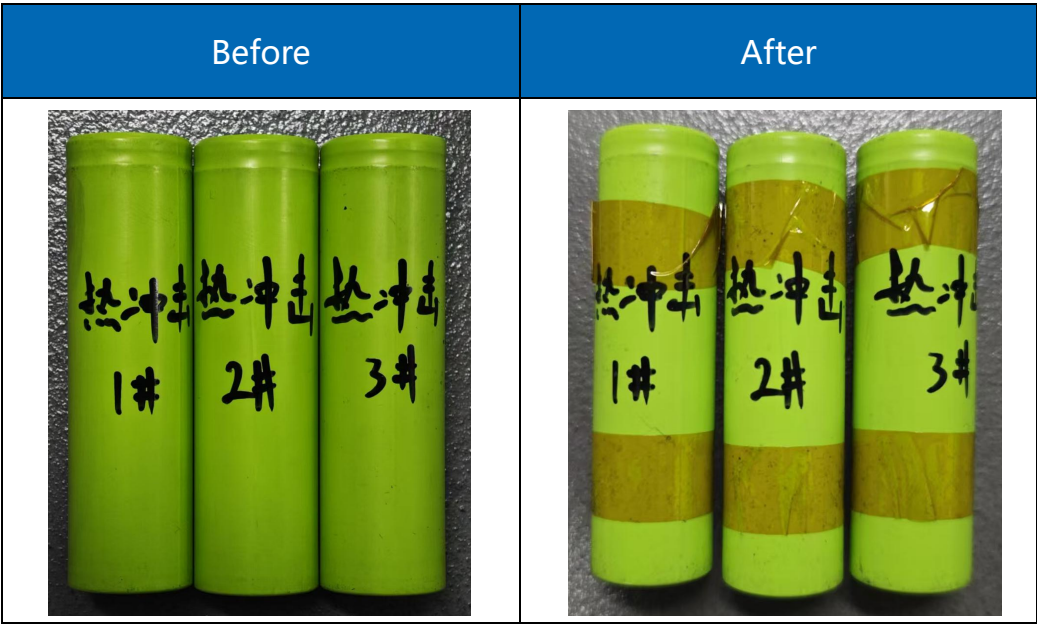
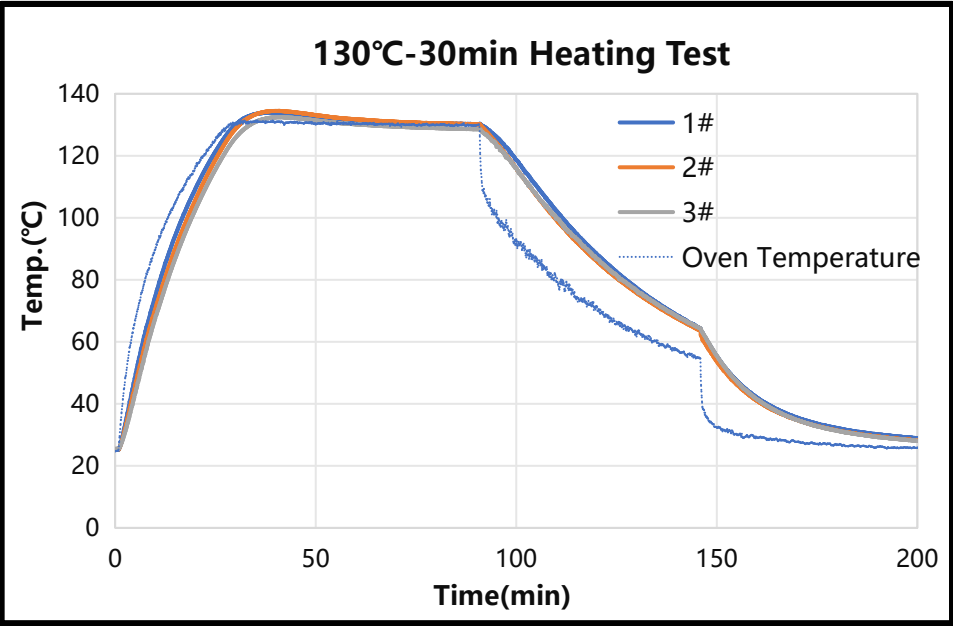


25°C 80mΩ Short Circuit Cell State: 100%SOC (CC(0.5C) to 4.2V , CV(4.2V) to 0.02C)					
Test: Cell is short-circuited with a wire of 80 mΩ at 25°C					
Criterion: No fire, No explosion					
No.	OCV/V	IR/mΩ	Max. Temp./°C	Result	Judgment
1	4.188	14.0	104.8	No fire, No explosion	PASS
2	4.188	14.6	117.6	No fire, No explosion	PASS
3	4.185	14.5	115.5	No fire, No explosion	PASS



● 130°C Heating Test

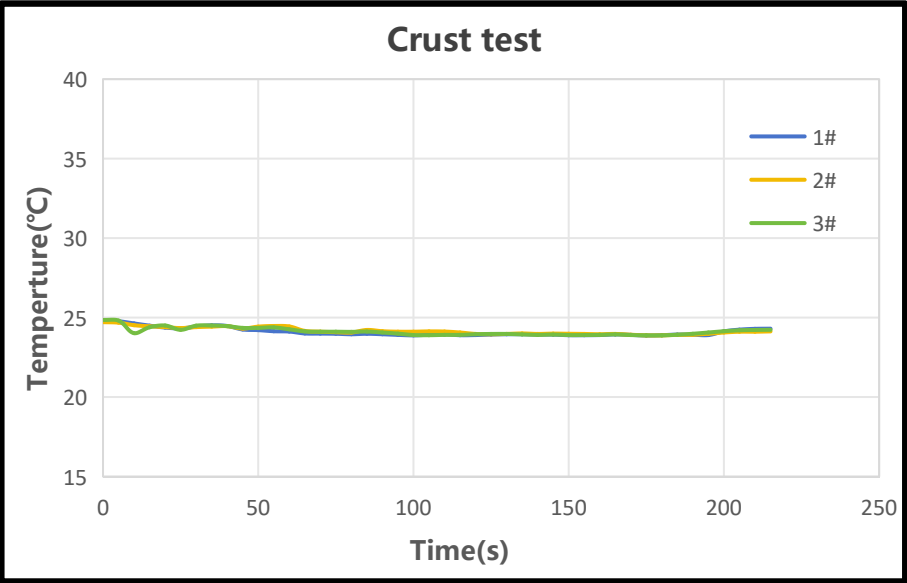
130°C Hot Box Cell State: 100%SOC (CC(0.5C) to 4.2V , CV(4.2V) to 0.02C)					
Test: Cell is heated to 130°C at a rate of 5°C/min and kept at 130°C for 30min					
Criterion: No fire, No explosion					
No.	OCV/V	IR/mΩ	Max. Temp./°C	Result	Judgment
1	4.192	14.6	133.8	No fire, No explosion	PASS
2	4.187	14.0	134.5	No fire, No explosion	PASS
3	4.189	14.3	132.5	No fire, No explosion	PASS



Forced discharge Cell State: 0%SOC (CC(0.2C) to 2.5V)						
Test: Reverse charge until the time of charge ≥90 min						
Criterion: No fire, No explosion						
No.	OCV/V	IR/mΩ	OCV ' /V	IR' /mΩ	Max. Temp./°C	Judgment
1	3.263	14.4	0	15.0	52.2	PASS
2	3.275	14.6	0	15.2	51.7	PASS
3	3.272	14.6	0	15.1	54.2	PASS



Crush Cell State: 100%SOC (CC(0.5C) to 4.2V , CV(4.2V) to 0.02C)					
Test: Cell is crushed between two flat surfaces till crushing force is approximately 13KN.					
Criterion: No fire, No explosion					
No.	OCV/V	IR/mΩ	Max. Temp./°C	Result	Judgment
1	4.187	14.2	24.8	No fire, No explosion	PASS
2	4.187	14.4	24.7	No fire, No explosion	PASS
3	4.184	14.2	24.9	No fire, No explosion	PASS



Crush Cell State: 100%SOC (CC(0.5C) to 4.2V , CV(4.2V) to 0.02C)				
Test: Drop the positive and negative terminals of the battery downward from a height of 1.5 meters onto the cement floor freely.				
Criterion: No fire, No explosion, No leakage				
No.	OCV/V	IR/mΩ	Result	Judgment
1	4.181	14.2	No fire, No explosion, No leakage	PASS
2	4.178	14.5	No fire, No explosion, No leakage	PASS
3	4.180	14.5	No fire, No explosion, No leakage	PASS
4	4.180	14.5	No fire, No explosion, No leakage	PASS
5	4.180	14.6	No fire, No explosion, No leakage	PASS
6	4.179	14.5	No fire, No explosion, No leakage	PASS
7	4.179	14.4	No fire, No explosion, No leakage	PASS
8	4.182	14.4	No fire, No explosion, No leakage	PASS
9	4.180	14.4	No fire, No explosion, No leakage	PASS
10	4.180	14.3	No fire, No explosion, No leakage	PASS

05

Certification

Certification	Status
CB IEC62133	Completed
CCC	Completed
CE	Completed
UL1642	Completed
UN38.3	Completed

The background of the slide features a large, stylized graphic of interlocking gears. The gears are composed of a grid of small dots, with some dots highlighted in a darker blue. The graphic is set against a solid blue background. The Shineway logo is positioned in the top left corner.

Shineway

To a great partnership!

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