

Report No.: GZABB190722008-01

APPLICATION FOR IEC TEST REPORT

Hubei Lanbotai New Energy Co., Ltd Client Name

The two building of Hualinkindergarten back yard, Jujube City, Hubei Province, translated into Address

Polymer Li-ion Cell **Product Name**

Jul. 26, 2019 Date

Anbotek (Guangzhou) Compliance Laboratory Limited



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TEST REPORT

EN 62133: 2012

Secondary cells and batteries containing alkaline or other non-acid electrolytes — Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications

Report

Reference No. GZABB190722008-01

Compiled by (+ signature) King Chen / Project Engineer

Approved by (+ signature) Terry Tian / Project Manager

Date of issue Jul. 26, 2019

Testing laboratory

Name Anbotek (Guangzhou) Compliance Laboratory Limited

Technology Development Area, Guangzhou, Guangdong, China

Anbotei

Testing location: Anbotek (Guangzhou) Compliance Laboratory Limited

Client

Name.....: Hubei Lanbotai New Energy Co., Ltd.

Address : The two building of Hualinkindergarten back yard, Jujube City,

Hubei Province, translated into

Test specification

Standard.....: IEC 62133: 2012

Test procedure: Compliance with IEC 62133: 2012

Non-standard test method: N.A.

Test item

Description Polymer Li-ion Cell

Trademark.....: N.A.

Model and/or type reference: 401214

Manufacturer..... Same as client

Address Same as client

Factory: Same as client

Address: Same as client

Rating(s)...... DC 3.7V, 35mAh

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Address: Rm.508, Bld.2, No.232, Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China



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Particulars: test item vs. test requirements

Test case verdicts

Test case does not apply to the test object ······: N (.A.)

Test item does meet the requirement ······ P (ass)

Test item does not meet the requirement ······ F (ail)

Testing

General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

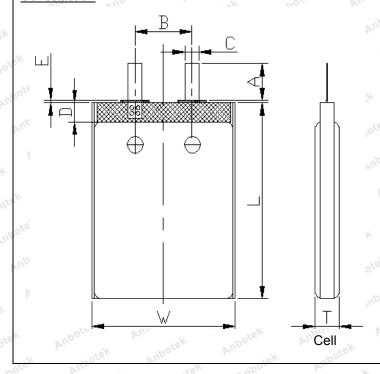
The test results presented in this report are only relevant to the test sample.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a dot is used as the decimal separator.

Construction



test item	technical specification
Aupore.	Max4.1mm
W	Max12.2mm
H	Max17mm
C VUD	Max2.1mm
votek V	Max8mm
D	Max4mm
AUDOE "	Max1.5mm

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Copy of marking plate:

The artwork below may be only a draft.

Polymer Li-ion Cell

401214 ICP5/13/17

DC 3.7V., 35mAh, 0.1295Wh

(+), (-)

Hongyun lithium technologyelectronics factory 2018.06.15



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General product information and other remarks:

The cell consists of the positive electrode plate, negative electrode plate, separator, electrolyte and case.

The positive and negative electrode plates are housed in the case in the state being separated by the separator.

The main features of the cells are show as below(clause 8.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Final Voltage
401214	35mAh	3.7V	7mA	7mA	35mA	35mA	4.2V	2.42V

The main features of the cells are show as below(clause 8.1.2):

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
401214	4.25V	1.75mA	0℃	45 ℃



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Anboarek	nbotek Anbote	IEC 62133: 2012	Anbo	A. Sporek	Anbore
Clause	Requirement + Test	And neek Andr	Result - Remark	A. hotek	Verdict

4	PARAMETER MEASUREMENT TOLERANCES	P And
Vek.	Parameter measurement tolerances	P

5	General safety considerations		Brek
5.1 Anboten	General	tak anbotek Anbo	Pnote
5.2 _{mb} o	Insulation and wiring	tek nbotek Anbote	N
nbotek Ar	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 $\text{M}\Omega$	No metal case exists.	nbotek
Aupore	Insulation resistance (MΩ):	Anbotek Anbo	_
Anbotek	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	ok Anbotek Anbotek	N
tek An	Orientation of wiring maintains adequate creepage and clearance distances between conductors	Anbotek Anbotek Anb	rek N
Anbotek	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse	Anbotek Anbotek A	ibote N
5.3 Nooten	Venting	ek nbotek Anbote	Potel
tek Anhor	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition	Venting mechanism exists on the narrow side of pouch cell.	P Anb
Anbotek Anbotek	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief	Anbotek Anbotek A	bote ^N
5.4	Temperature/voltage/current management	Cell only	Worker
ek Anbor	Batteries are designed such that abnormal temperature rise conditions are prevented	stek Anbotek Anbotek	Nanbe
botek potek	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	Anbotek Anbotek Anbo	Dotek N A
Anbotek Anbotek Anbote	Batteries are provided with specifications and charging instructions for equipment manufacturers so that associated chargers are designed to maintain charging within the temperature, voltage and current limits specified	tek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	Anbotek Anbotek
5.5	Terminal contacts	Thought Anbolek Anbol	P
Anbotek	Terminals have a clear polarity marking on the external surface of the battery	The "+" and "-" polarity explicitly marked on surface of the cell.	otek P Anbotek

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hotek	IEC 62133: 2012	N. Matek Maboter	And
Clause	Requirement + Test	Result - Remark	Verdict
Anbo	Tok tokek Anbote And	Complied	K _ A1
stek Ar	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Complied.	otek P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	Complied.	inbotr P
Anbore	Terminal contacts are arranged to minimize the risk of short circuits	Complied.	Pabol
5.6	Assembly of cells into batteries	Cell only	N Þ
5.6.1	If there is more than one battery housed in a single battery case, cells used in the assembly of each battery have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer	Anbotek Anbotek Anbotek Anbotek	nbotek Anbotek
Anbot	Each battery has an independent control and protection	otek Anbotek Anbotek	N
botek And	Manufacturers of cells make recommendations about current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly	Anbotek Anbotek Anbo	lek N
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate separate circuitry to prevent the cell reversal caused by uneven discharges	Anbotek Anbotek Anbotek Anbotek	Anbote
botek Ant	Protective circuit components are added as appropriate and consideration given to the end-device application	inbotek Anbotek Anbo	ek N
Anbotek	When testing a battery, the manufacturer of the battery provides a test report confirming the compliance according to this standard	Anbotek Anbotek Anbotek	AnboN k
5.6.2 MOON	Design recommendation for lithium systems only	otek Anboten Anbo	N
otek Anb	For the battery consisting of a single cell or a single cellblock: - Charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Clause 8.1.2, Table 4; or	Cell only	otek botek
Anbotek Anbotel	- Charging voltage of the cell does not exceed the different upper limit of the charging voltage determined through Clause 8.1.2, NOTE 1.	tek Anbotek Anbotek	Anbotel Anbotel

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	IEC 62133: 2012		
Clause	Requirement + Test	Result - Remark	Verdict
Aupo	hek abote Anti-	notek Anbor An	Y.
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - The voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, by monitoring the voltage of every single cell or the single cellblocks; or	Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	nbotek Anbotek
botek Anbot	- The voltages of any one of the single cells or single cellblocks does not exceed the different upper limit of the charging voltage, determined through Clause 8.1.2, NOTE 1, by monitoring the voltage of every single cell or the single cellblocks	Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	hek An
Anbotek Anbotek Anbote	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - Charging is stopped when the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks; or	ok Anbotek Anbotek Notek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	Anbot Anbot
Anbotek Anbotek	- Charging is stopped when the upper limit of the different charging voltage, determined through Clause 8.1.2, NOTE 1, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks	Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	boteN Anbotek Anbote
5.7 Anb	Quality plan	notek Anbot Anbotek	PAnt
otek And	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	stek anboten Anb	ek P potek Anbotek

6	Type test conditions		P
botek botek	Tests were made with the number of cells or batteries specified in Table 1 for nickel-cadmium and nickel-metal hydride systems and Table 2 for lithium systems, using cells or batteries that are not more than six months old	Complied. Table 2 for Lithium system.	P ^A An
Anbote	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.	Tests are carried out at 20°C ± 5°C.	Anbotek

7	Specific requirements and tests (nickel systems)		
7.1	Charging procedure for test purposes	Lithium system.	N
7.2	Intended use	Anb. sek abotek An	N
7.2.1	Continuous low-rate charging (cells)	Anbo rek nbotek	Yupold A

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191	IEC 62133: 2012	tek spore	Ville
Clause	Requirement + Test	Result - Remark	Verdic
K AND	Results: No fire. No explosion	Botek Anbo Atek Anboi	N
.2.2	Vibration	Anbotek Anbo A.	Diek N
.2.2	Results: No fire. No explosion. No leakage	Vuporek Kupor Vu	anbotek N
.2.3	My Jek Who, My	nbotek Anbore	PULL IN
.Z.S	Moulded case stress at high ambient temperature	ek abotek Anbote	AUM
N. 2004	Oven temperature (°C):	Ar hotek Anbotek	<u> </u>
sk sul	Results: No physical distortion of the battery casing resulting in exposure if internal components	pote And abotek Anbot	N
.2.4	Temperature cycling	Anbos An abotek An	N Stere
, ak	Results: No fire. No explosion. No leakage.	Anbor All hotek	AnboteN
.3	Reasonably foreseeable misuse	Anbote K Ans	AnbNe
.3.10 ⁰⁰⁰⁰	Incorrect installation cell	k Anbole And	N
k Aupote	The test was carried out using: - Four fully charged cells of the same brand, type, size and age connected in series, with one of them reversed; or	otek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	N N
,or ,	- A stabilized dc power supply.	Anbote Ant hotek	Natodek
Auporg	Results: No fire. No explosion	Anbote. K Anb	Anb Ne
.3.2	External short circuit	k Anboten Anbo	No
k Aupore	The cells or batteries were tested until one of the following occurred: - 24 hours elapsed; or	otek Anbotek Anbotek Anbote	N N
otek p	- The case temperature declined by 20% of the maximum temperature rise	Anbotek Anbotek	nbote N
'un	Results: No fire. No explosion	And tek abotek	Aupon
.3.3	Free fall	Aupa rek spotek	_P N°
Aupo	Results: No fire. No explosion.	stek Anbor An botel	N _N
.3.4	Mechanical shock (crash hazard)	abotek Anbote An	N Yste
yek P	Results: No fire. No explosion. No leakage.	anbotek Anbote Anti	oteKN
.3.5	Thermal abuse	abotek Anbotes A	N
botek	Oven temperature (°C):	hotek Anbotek	_
notek	Results: No fire. No explosion.	K Notek Anbotek	N
.3.6	Crushing of cells	to Ann stek subotek	N ₂
tek Anno	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or	abotek Anbotek Anbo	tek N

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Anb	IEC 62133: 2012	Anbo Lak botek	Anbote
Clause	Requirement + Test	Result - Remark	Verdict
Anbo	And And And	notek Anbolt And	.Y
	- An abrupt voltage drop of one-third of the original voltage has been obtained	Anbotek Anbotek Anbot	otek N A
Anbotek Anbotek	The cell is prismatic type and a second set of samples was tested, rotated 90° around longitudinal axis compared to the first set	Anbotek Anbotek	nbot N Anbotek
Anbore	Results: No fire. No explosion	ek Anbotes And	Npo
7.3.7 pm	Low pressure	otek Anboter Anb	N
cek An	Chamber pressure (kPa)	hotek Anbotek Anbo	_
notek	Results: No fire. No explosion. No leakage.	kno otek Anbotek Anb	N
7.3.8	Overcharge	And otek unbotek	Upor N
Ans	Results: No fire. No explosion	Anto tek nbotek	PUPUL
7.3.9	Forced discharge	Anbo Ak Abotek	Noon
Vupor	Results: No fire. No explosion	otek Anbott Ant	N _s

8	Specific requirements and tests (lithium systems)	Specific requirements and tests (lithium systems)	
8.1	Charging procedures for test purposes	And tek abotek A	Ipore P
8.1.1	First procedure: This charging procedure applied to tests other than those specified in 8.1.2	k Anbotek Anbotek	Anb P
8.1.2	Second procedure: This charging procedure applied to the tests of 8.3.1, 8.3.2, 8.3.4, 8.3.5, and 8.3.9	Potek Aupotek Aupotek	P _{Anb} c
Anbotek Anbotek	If a cell's specified upper and/or lower charging temperature exceeds values for the upper and/or lower limit test temperatures of Table 4, the cells were charged at the specified values plus 5°C for the upper limit and minus 5°C for the lower limit	Charge temperature 0-45°C declared.	poten P Ambotek Ambotek
Jek Au	A valid rationale was provided to ensure the safety of the cell (see Figure A.1)	botek Anbotek Anbotek	PAnbo
Anbotek Anbotek	For a different upper limit charging voltage (i.e. other than for lithium cobalt oxide systems at 4,25 V), the applied upper limit charging voltage and upper limit charging temperatures were adjusted accordingly	Lithium cobalt oxide system only.	ootekN Anbotek
Anbott	A valid rationale was provided to ensure the safety of the cell (see Figure A.1)	tek Anbotek Anbotek	Nanbot
8.2	Intended use	bote Ame	P An
8.2.1	Continuous charging at constant voltage (cells)	Test complied.	oote ^K P
Aupoter	Results: No fire. No explosion	(See Table 8.2.1)	nbo'P'

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Clause	Requirement + Test	Result - Remark	Verdict
Clause	Requirement + Test	Result - Remark	veruic
8.2.2	Moulded case stress at high ambient temperature (battery)	No moulded case existed.	otek N
nbotek	Oven temperature (°C):	Anbotek Anbote An	
Anbotek	Results: No physical distortion of the battery casing resulting in exposure of internal components	Anbotek Anbotek	Anbole
8.3	Reasonably foreseeable misuse	Anto tek shotek	₽ _{/p}
8.3.1	External short circuit (cell)	potek Anbor Ak shotel	P
hotek Ani	The cells were tested until one of the following occurred: - 24 hours elapsed; or	Ambotek Ambotek Amb	otek N
Anborek	- The case temperature declined by 20% of the maximum temperature rise	k Anbotek Anbotek	Anh Pe
k.	Results: No fire. No explosion	(See Table 8.3.1)	P
8.3.2	External short circuit (battery)	Cell only	NP
potek Pur	The batteries were tested until one of the following occurred: - 24 hours elapsed; or	Anbotek Anbotek Anbr	ibotek
Anbotek	- The case temperature declined by 20% of the maximum temperature rise	Anbotek Anbotek	AnbN
ek Anbote	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition	otek Anbotek Anbotek	PN A
pote p	Results: No fire. No explosion	(See Table 8.3.2)	poteKN
8.3.3	Free fall	Aupoter, Vupo, Vek	, abo₽K
Anbotek	Results: No fire. No explosion.	No fire. No explosion.	Po
8.3.4	Thermal abuse (cells)	tek anbotek Anbote	P
Anbe	The cells were held at 130°C ± 2°C for: - 10 minutes; or	Test complied.	ek Par
potek A	- 30 minutes for large cells (gross mass of more than 500 g as defined in IEC 62281)	Anbotek Anbotek An	pote ^K N
hotek.	Oven temperature (°C)	130°C	_
Anv	Gross mass of cell (g)	<500g, small cell.	_
K Am	Results: No fire. No explosion.	No fire. No explosion.	Po
8.3.5	Crush (cells)	Tested complied.	^Ж Р
otek Ar	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or	Anbotek Anbotek An	ote ^K P

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	IEC 62133: 2012		
Clause	Requirement + Test	Result - Remark	Verdict
Anbo	And tek abote And	nek Anbole Am	K
	- An abrupt voltage drop of one-third of the original voltage has been obtained; or	Anbotek Anbotek Anbot	otek N A
hote.	- 10% of deformation has occurred compared to the initial dimension	Anbotek Anbotek	M ^{todn}
An hotek	Results: No fire. No explosion	(See Table 8.3.5)	AUD
8.3.6	Over-charging of battery	Cell only	N _{po}
tek And	Test was continued until the temperature of the outer casing: - Reached steady state conditions (less than 10°C change in 30-minute period); or	Anbotek Anbotek Anbotek Anbotek	N Ar
nbotek	- Returned to ambient	abotek Anbote A	Nek
botek	Results: No fire. No explosion	(See Table 8.3.6)	And N
8.3.7	Forced discharge (cells)	Test complied.	P
Y V	Results: No fire. No explosion	(See Table 8.3.7)	PAN
8.3.8	Transport tests	Inposes And Stek Subc	rek P
Anbotek	Manufacturer's documentation provided to show compliance with UN Recommendations on Transport of Dangerous Goods	(See Table 8.3.8)	ibote P
8.3.9	Design evaluation – Forced internal short circuit (cells)	Tested complied.	Ambot
ek Aut	The cells complied with national requirement for:	For France, Japan, Republic of Korea and Switzerland.	_
ootek I	The pressing was stopped upon: - A voltage drop of 50 mV has been detected; or	Anbotek Anbotek An	N/A
Anbotek	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	400N for prismatic cells	Anb P
nbote	Results: No fire	(See Table 8.3.9)	Р

9	9 Information for safety		
Anbotek	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.	Cell specifications provided.	pote ^k P Anbote ^k
Anbo Anbo	The manufacturer of batteries ensures that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards.	tek Anbotek Anbotek	Ambot Ambot
Anbotek Anbotek	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product	Anbotek Anbotek Anbotek	otek N A

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Anos	IEC 62133: 2012	lek Aupo	tek abotek	Anbote
Clause	Requirement + Test	Result - Rer	mark	Verdict
otek Anb	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user	Arbotek Anbotek	Anbotek Anbr	nbotek N A

10	Marking		Ant Prek
10.1	Cell marking	ek Anbore Ant	Papote
Kek Anboi	Cells marked as specified in the applicable cell standards: IEC 61951-1, IEC 61951-2 or IEC 61960.	See marking plate on page 5.	PAnb
10.2	Battery marking	Anbote And Motek Anb	N P
Anbotek Anbotek	Batteries marked in accordance with the requirements for the cells from which they are assembled.	Anbotek Anbotek A	nboteN Anbotek
Anboth	Batteries marked with an appropriate caution statement.	otek Anbotek Anbotek	Noore
10.3	Other information	stek spotek Anbots	PAM
nbotek	Storage and disposal instructions marked on or supplied with the battery.	Anbotek Anbotek Anbo	P A
Anbotek Anbotek	Recommended charging instructions marked on or supplied with the battery.	Information for recommended charging instructions mentioned in manufacturer's specifications.	Anbotek Anbotek

⁹ 11	Packaging	Packaging		
Anbote ^k	The materials and packaging design are chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants.	Anbotek Anbotek An	Anbotek	

Annex A	Annex A Charging range of secondary lithium ion cells for safe use		P _{Anbo'}
A.1 Anb	General	abotek Anbote Am	et P
A.2	Safety of lithium-ion secondary battery	Complied.	ote/P
A.3	Consideration on charging voltage	Complied.	P
A.3.1	General	Charging voltage is 4.2V	And P tek
A.3.2	Upper limit charging voltage	4.25V	NP
A.3.2.1	General	ore And Otek Anbotek	Puppe
A.3.2.2	Explanation of safety viewpoint	hote And stek shot	P An'
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	4.25V applied.	ote ^K N
A.4	Consideration of temperature and charging current	Art. Otek Anbotek	Anbo P . ok

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- Kek	IEC 62133: 2012	A. Above	And
Clause	Requirement + Test	Result - Remark	Verdict
Anbo	Anu stek Anbote Anu	potek Albor Ar. hote	y P
A.4.1	General	abotek Anbote And	P P
4.4.2	Recommended temperature range	See A.4.2.2.	P
4.4.2.1	General	And botek anbotek p	upo P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature declared by client is: 0-45°C	Ant Pie
4.4.3 MAN	High temperature range	Not higher than the temperature range specific in this standard.	N A'
4.4.3.1	General	Anboten Anb	N
A.4.3.2	Explanation of safety viewpoint	And Lotek Anbotek A	Upor NºK
A.4.3.3	Safety considerations when specifying charging conditions in high temperature range	k Anbotek Anbotek	Anbo
A.4.3.4	Safety consideration when specifying new upper limit in high temperature range	otek Anbotek Anbotek	N
\.4.4	Low temperature range	Lower than the temperature range specific in this standard.	P P
A.4.4.1	General	botek Anboten Al	Pek
A.4.4.2	Explanation of safety viewpoint	k notek Anbotek	Anbo
A.4.4.3	Safety considerations, when specifying charging conditions in low temperature range	otek Anbotek Anbotek	PP AT
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	-5°C applied.	e ^k P
A.4.5	Scope of the application of charging current	Anba tek abotek Ar	pote P
A.5	Sample preparation	Anbor An hotek	Anberen
A.5.1	General	Anbote And	Pot
A.5.2	Insertion procedure for nickel particle to generate internal short	otek Aupotek Aupotek	P _{An} i
otek A	The insertion procedure carried out at 20°C±5°C and under -25°C of dew point	Anbotek Anbotek Anbot	P
A.5.3	Disassembly of charged cell	Anbore Anbore An	~ P [×]
A.5.4	Shape of nickel particle	hotek Anbote	Pot
A.5.5	Insertion of nickel particle to cylindrical cell	rek abotek Anboten	N
A.5.5.1	Insertion of nickel particle to winding core	ok hotek Anbotek	N
A.5.5.2	Mark the position of nickel particle on the both end of winding core of the separator	nbotek Anbotek Anbor	N
	ale. And work	Al. IEL W)~

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	TABLE: List of critical	components			PARE
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹)
Cell	Hongyun lithium tech nologyelectronics fact orv	401214	3.7V, 35mAh	IEC 62133:2012	Test with appliance

An asterisk indicates a mark which assures the agreed level of surveillance.

8.2.1	2.1 TABLE: Continuous charging at constant voltage (cells)			Р
Sample No.	Recommended charging voltage V _{c.} (Vdc)	Recommended charging current I _{rec} , (mA)	OCV at start of test, (Vdc)	Results
C1	4.20	An Anboten	4.19	Pote
C2	4.20	And otek7 anbotek	4.19	ek PAnboter
C3	4.20	And 7k nbot	4.19	otek P Anbo
C4	4.20	Anbo 7	4.19	otekP N
C5 Anbox	4.20	otek AIT	4.19 de la constant d	And Pk

Supplementary information:

- No fire or explosion No leakage

6	8.2.2	TABLE: Moulded case stress at high	N	
1	Sample No.	Ambient, (°C)	OCV at start of test, (Vdc)	Results
)	Lek -	otek Anbolo - Anti-	nbotek Anbo k hotek	Anbore.
7	DOS NO	hotek Anbole Ant tek	nbotek Anbote Annotek	Antotek
	Aupora-	me Lotek Auportek Aupor	Anbotek Anbotes Anbo	K -nbotek

Supplementary information:

- No fire or explosion
- No leakage
- Others (please explain)

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8.3.1	TABLE: External	Р				
Sample No. Ambient, (°C)		OCV at start of test, (Vdc)			Results	
Charging ten	nperature: -5° C	k Pur	Anbotek Anbo	tek abotek	Anbore.	
C6	22.4	4.11	85.3	112.5	ARoote	
And C7	22.4	4.12	74.9	106.6	cek PAnbot	
C8	22.4	4.11	80.2	112.1	notek P An	
C9	22.4	4.10	68.6	105.3	TeVP	
C10 _M	22.4	4.12	75.3	114.1	Anb Pek	
Charging ten	nperature: 45°C	k anbotek	Anbott An	otek Anboten	Anbo	
C11	22.1	4.20	85.3	110.2	PP	
C12	22.1	4.21	74.9	114.1	ek Pupor	
C13	22.1	4.22	80.2	108.6	potek P Ant	
C14	22.1	4.21	68.6	105.9	nbotekP	
C15	22.1	4.21	75.3	114.7	~ P [/]	

8.3.2	TABLE: External	TABLE: External short circuit (battery)									
Sample No. Ambient, (°C)		OCV at start of test, (Vdc)	Resistance of circuit, (m Ω)	Maximum case temperature (°C)	Results						
Charging ten	nperature: -5° C	anbotek	Anbor An	stek Anboten	Anbo						
potek	"upote" Vup.	ek nbotek	Aupor Au	notek Anbotek	Aupo-						
POJEK	Anboten Anbo	stek - nbotek	Anbore A	notek - Anboth	Anbo						
An - wotek	Anboten A	los - note	k Wipose	Ann oten Ani	lotek - Aupr						
An note	K Andotek	Aupo Kak	otek -Anbote	And tek	nbotek A						
-And	tek -nbotek	Wupon - W	hotek - Anboten	Anbe	abotok						
Charging ten	nperature: 45°C	Anbore	Anbo	tek Anbo	A. botek						
nbotek I	inpo rek apo	ek Aupole,	And ster or	botek - Anbors	K An-						
vuperek	Anbor Ar.	notek - Anboten	Aups tek	abotek - Anbote	V V						
anbotek	Anbore Ar	hotek - Anbote	AUDO FEK	Ant Ant	ote. And						
- nbote	Aupore.	Ant Anb	otek Anbo	Pr.	inpoter - Ar						
P. P.	tek Anbote.	Yun Jek	abotek - Anbot	ok hotek	Anboten						
Supplement	ary information:										

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- No fire or explosion

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8.3.3	TABLE: Free fall		PAND
Sample No.	OCV at start of test, (Vdc)	OCV at removal of thermal free fall, (Vdc)	Results
C16	4.17	4.17 And	Psk Psk
C17	4.17	4.17 And	Potek
C18	4.17	Anna tek 4.17 otek Anna	P potek

- No fire or explosion

8.3.4	TABLE: Thermal abuse (cells)		P	
Sample No. OCV at start of test, (Vdc)		Ambient, (°C)	Temperature raised at a rate, (°C)	Results	
Charging ten	nperature: -5° C	nbotek Anbote	K notek Anbot	ek Anbos	
C19	4.12	130±2	5°C/min	potek P Anb	
C20	4.11	130±2	5°C/min	Anbotek P A	
C21	4.10	130±2	5°C/min	Anbotek	
C22	4.12	130±2	5°C/min	ArBotek	
C23	4.10	130±2	5°C/min	K Panbotel	
Charging ten	nperature: 45°C	Anbo stek shoot	tek Aupolo Aus	otek Anbr	
C24	4.21	130±2	5°C/min	wotekP A	
C25	4.21	130±2	5°C/min	Anshoten	
C26	4.20	130±2	5°C/min	Ans Potek	
C27	4.21	130±2	5°C/min	K P hotek	
C28	4.21	130±2	5°C/min	P	

- No fire or explosion



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8.3.5	TABLE: Crush (cells)									
Sample No.	test (Vdc) of crushing of cell before deformation		Required deformation for crush, (mm)	Results						
crushing app	or prismatic cell is coaratus. Test only the more of 13kN \pm 1	e wide side of prism	natic cells.	el to the flat surfaces	of the					
Charging ten	nperature: -5° C	abotek Anboten	Kupe	Aupotek Aupo	rok be					
C29	4.11	botek O Anbo	Aup Stek	Anbotek A	P A					
C30 000	4.11	0° A	poter _ Anb	k abotek	Anbore P.					
C31	4.12	Otek	Anbotek Anbot	tek - abotek	Aup P					
C32	4.11	A O TOTAL	Anbotek Ant	- Notek	A.P. ofer					
C33	4.10	O'n stek	Nupetek I	upor - Al	ek Panbo					
Charging ten	nperature: 45°C	inbotes Anb	ek nbotek	Anbore Am	otek Ar					
C34	4.20	Anbotek O Anbe	rek - abotek	Anbore Ar	otekP					
C35 Choo	4.21	Ambotok An	bor Notel	Anhote	Anb Pk					
C36	4.21	O tek	Aupor - Air	tek Anboten	Anb P tek					
C37	4.21	tek Onbotek	Anbore Am	hotek Anbotek	MP					
100000		Pr	-0/0	Co.	Sk Bupo,					

8.3.6	TABLE: Over-charging	of battery		N		
Supply volta	_					
Sample No.	ole No. OCV before charging, (Vdc) Constant charging casing temperature, (°C)					
ek - abote	Anbor An	stek Antotek Ant	o A botek	Anbore - An		
rek - 20	Stek Aupote, Yur	otek -nbotek	Inport Am Hotek	Anboten		
DOC	hotek Anboten	nbotek nbotek	Anbote And	Aupotek		
Anbore A	notek Anbotek	Anbo - A botek	Anbotes Anb	k -nbotek		
Anbore	And otek Anbotek	Anbox An hote	K Anboten Anbo	rek - abote		
Supplement	ary information:	K Jpose Ville	k solek ant	b.,		

otek

Supplementary information:

- No fire or explosion

Anb

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8.3.7	TABLE: Forced dischar	ge (cells)		Р
Sample No.	OCV before application of reverse charge, (Vdc)	Measured Reverse charge I _t , (mA)	Time for reversed charge, (minutes)	Results
C39 3.43		35	90	AnbP
C40	3.42	35	90	Rooter
C41	3.42	35	90	cek Panbotek
C42	3.44	35	90	otek P Anbol
C43	3.44	35	90	P P

Supplementary information:

- No fire or explosion

8.3.8 Table for datail data

1. Altitude simulation

	No.	Pre-	test knbc	Afte	r test	Mass	Voltage	Whether leakage,
otek otek		Mass (g)	Voltage (V)	Mass (g)	Voltage (V)	loss (%)	loss (%)	venting, disassembly, rupture, fire (Y/N)
0,50	C44	0.7536	4.168	0.7536	4.168	0.00	0.00	Potek Nipor
UP	C45	0.7396	4.174	0.7396	4.174	0.00	0.01	botek N Anbote
An	C46	0.7641	4.170	0.7641	4.170	0.00	0.00	notek N Anbotek
	C47	0.7718	4.167	0.7717	4.167	0.01	0.00	And Anbot
6	C48	0.7605	4.165	0.7605	4.165	0.00	0.00	And Nek
Vex.	C49	0.7748	4.170	0.7748	4.170	0.00	0.01	ANN LOK
300	C50	0.7616	4.171	0.7616	4.171	0.00	0.00	potek Noot
100	C51	0.7619	4.169	0.7618	4.169	0.01	0.00	nbotek Nanbote
VUI	C52	0.7504	4.173	0.7504	4.173	0.00	0.01	botek N Anbote
	C53	0.7487	4.171	0.7487	4.171	0.00	0.00	And Anbote

2. Thermal test

No.	Pre	-test	Afte	er test	Mass	Voltage	Whether leakage,
20 r	Mass (g)	Voltage (V)	Mass (g)	Voltage (V)	(%) disas	venting, disassembly, rupture, fire (Y/N)	
C44	0.7536	4.168	0.7532	4.152	0.05	0.38	nbotek N Anbot
C45	0.7396	4.174	0.7393	4.157	0.04	0.40	abotek N Anbote
C46	0.7641	4.170	0.7638	4.154	0.04	0.38	And No And
C47	0.7717	4.167	0.7713	4.150	0.06	0.41	N tek
C48	0.7605	4.165	0.7601	4.149	0.05	0.38	ANN tek
C49	0.7748	4.170	0.7745	4.155	0.04	0.35	abotek Napo

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C50	0.7616	4.171	0.7613	4.154	0.04	0.41	Anbotel N Anbo
C51	0.7618	4.169	0.7615	4.153	0.04	0.38	Anboton Anbo
C52	0.7504	4.173	0.7500	4.157	0.05	0.37	cek ant Neek An
C53	0.7487	4.171	0.7484	4.155	0.05	0.38	N _{notek}

3. Vibration

No.	Pre-	test world	Afte	r test	Mass	Voltage	Whether leakage,	
	Mass (g)	Voltage (V)	Mass (g)	Voltage (V)	loss (%)	loss (%)	venting, disassembly, rupture, fire (Y/N)	
C44	0.7532	4.152	0.7532	4.152	0.00	0.00	ek anhNek An	
C45	0.7393	4.157	0.7392	4.157	0.01	0.00	otek Nootek	
C46	0.7638	4.154	0.7638	4.154	0.00	0.01	tek N potek	
C47	0.7713	4.150	0.7713	4.150	0.00	0.00	Anbo Lok N Botek	
C48	0.7601	4.149	0.7601	4.149	0.00	0.00	Anbou N An hote	
C49	0.7745	4.155	0.7744	4.155	0.01	0.00	Anbore N Ann	
C50	0.7613	4.154	0.7613	4.154	0.00	0.00	ek Anb Ne Ant	
C51	0.7615	4.153	0.7615	4.153	0.00	0.01	Otek Notek	
C52	0.7500	4.157	0.7500	4.157	0.00	0.01	stek Nabotek	
C53	0.7484	4.155	0.7484	4.155	0.00	0.00	Anbo tek N shotek	

4. Shock

4. SHOCK	Pre-test		Afte	After test		Anboten	Whether leakage,	
No. Anbot	Mass (g)	Voltage (V)	Mass (g)	Voltage (V)	Mass loss (%)	Voltage loss (%)	venting, disassembly, rupture, fire (Y/N)	
C44	0.7532	4.152	0.7532	4.152	0.00	0.00	notek Nanbotek	
C45	0.7392	4.157	0.7392	4.157	0.00	0.00	And stek N subotek	
C46	0.7638	4.154	0.7637	4.153	0.01	0.01	Anto teiN abot	
C47	0.7713	4.150	0.7713	4.150	0.00	0.00	Anbo N	
C48	0.7601	4.149	0.7601	4.149	0.00	0.01	ak AnbN ak	
C49	0.7744	4.155	0.7744	4.155	0.00	0.00	potek Moore	
C50	0.7613	4.154	0.7613	4.154	0.00	0.00	hotek Nanbote	
C51	0.7615	4.153	0.7614	4.153	0.01	0.00	Arthur N Anbotek	
C52	0.7500	4.157	0.7500	4.156	0.00	0.01	And oteVN anbote	
C53	0.7484	4.155	0.7484	4.155	0.00	0.00	Aup NK	

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8.3.9	TABLE: Forced internal short circuit (cells)				N
Sample No.	Chamber ambient, (°C)	OCV at start of test, (Vdc)	Particle location	Maximum applied pressure, (N)	Results
Charging ten	nperature: -5℃	k Pilek	Anbotek Anbo	tek abotek	Anbore
C54	nbotek 10 Anbote	4.12	Anboten Ant	400	Poore
C55	abote 10 Anto	4.11	Anb Nek	400	cek PAnbote
C56	10	4.10 And	ek 1botek	400	notek P Anb
C57	10	4.12	tek 1 nbotek	400	note/P
C58 C58	10	4.11	box 1 hote	400	And Pek
Charging ten	nperature: 45℃	Anbotek	Anbot Air	otek Anboten	Anboatek
C59	45 Am	4.21	Anbout 1	400	P
C60	Anbot 45	4.20	Anb 1	400	PAnbo
C61	45	4.22	ek Mose	400	potek P Anbe
C62	45	4.21	ootek 1 Anbotes	400	AnbotekP A
C63	45	4.20	botek 1 Anbote	400	nboP ^k

Supplementary information:

¹⁾ Identify one of the following:

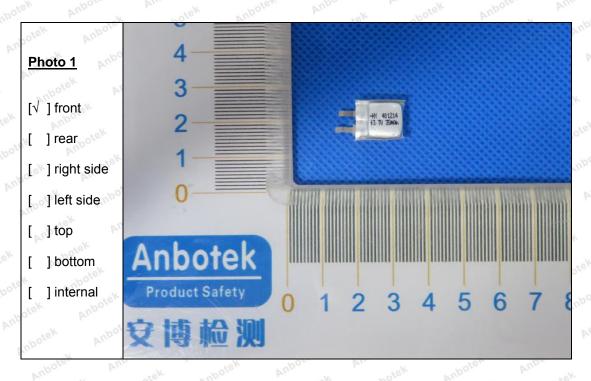
^{1:} Nickel particle inserted between positive and negative (active material) coated area.

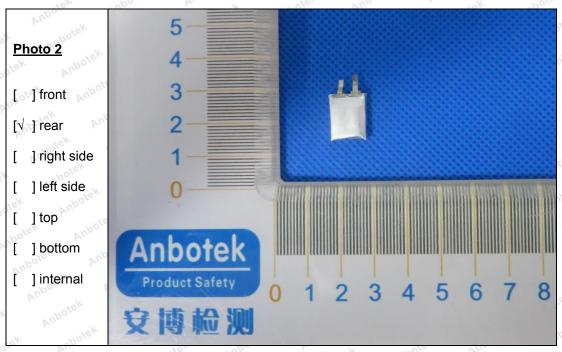
^{2:} Nickel particle inserted between positive aluminium foil and negative active material coated area.

No fire



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End of the report

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