



TEST REPORT

ReferenceNo.:SZ2023150732-2E

Date : July 15, 2023

Page No.: 1 of 5

Client :

Address :

The following merchandise was (were) submitted and identified by the client as:

Name of Product : Polymer Li-ion Cell

Test Model : 1260110

Model May Cover /

Lot No. : PO#649600

Main Material: /

Buyer: /

Sample Received : July 08, 2023

Test Period : July 08, 2023 - July 15, 2023

Test Specification and Conclusion:

Total Lead, Cadmium and Mercury content according to the Battery Directive
2006/66/EC and its subsequent amendments 2013/56/EU

PASS

Prepared By :

David Chen
Testing Engineer

Reviewed By :

Dora Cheng
Reporter Supervisor

Issued By :

Ada Wang
Lab Manager

STQ Testing Services Co., Ltd.

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TEST RESULTS:

Lead(Pb), Cadmium(Cd) and Mercury(Hg) Content

Test Method:

For Pb and Cd content: Analysis was performed by ICP-AES.

For Hg content: Analysis was performed by cold vapor atomic absorption spectrometry.

Test Item(s)	MDL (mg/kg)	Test Results (mg/kg)	Labelling Requirement# (mg/kg)	HLV (mg/kg)
		1# [▲]		
Pb	5	N.D.	>40	--*
Cd	5	N.D.	>20	20**
Hg	1	N.D.	>5	5**

- Note :**
- 1) MDL = Method Detection Limit
 - 2) N.D. = Not detected, less than MDL.
 - 3) HLV = Hazardous limited value
 - 4) #Batteries,accumulators and button cells containing more than 0,0005% mercury, more than 0,002% cadmium or more than 0,004% lead, shall be marked with the chemical symbol for the metal concerned: Hg,Cd or Pb.The symbol indicating the heavy metal content shall be printed beneath the symbol shown in Annex II and shall cover an area of at least one-quarter the size of that symbol.
 - 5) *According to the article 21.3, batteries, accumulators and button cells containing more than 0.004% lead, shall be marked with chemical symbol for the metal concerned.
 - 6) **Prohibitions
 1. Without prejudice to Directive 2000/53/EC, Member States shall prohibit the placing on the market of:
 - (a) all batteries or accumulators, whether or not incorporated into appliances, that contain more than 0,0005 % of mercury by weight;
 - (b) portable batteries or accumulators, including those incorporated into appliances, that contain more than 0,002 % of cadmium by weight.
 2. The prohibition set out in paragraph 1(b) shall not apply to portable batteries and accumulators intended for use in:
 - (a) emergency and alarm systems, including emergency lighting;
 - (b) medical equipment;
 - 7) [▲]As the client required, the sample was tested in mixture.

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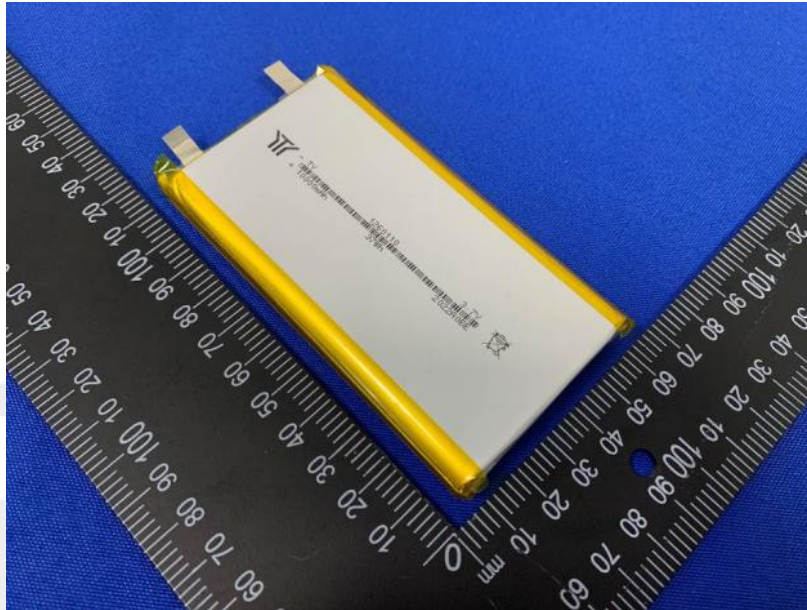
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Test Part Description:

1# 1260110 polymer battery

SAMPLE PHOTO



***** END OF REPORT *****

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GENERAL CONDITIONS OF SERVICES

STQ Testing Services Co.,Ltd. (hereinafter "STQ"), The testing or examining under the request of the customer should obey terms as follow, according to regulation of "Contract Law of the People's Republic of China" on processing and undertaking contract, our company have legal right of termination without any reason and have the right to accept or refuse testing or examining request:

1. STQ only acts for the person or body originating the instructions (the "Clients"). No other party is entitled to give instructions, particularly on the scope of testing or delivery of report or certificate, unless authorized by the Clients.
2. Sample recycling: when the testing or examining is finished, the customer should recycle the sample. Within 30 days after issuing of testing report, if the customer could not recycle the sample or send notification of sample recycling in written (for example, if the sample belongs to consumables, toxic drugs, dangerous goods and other items that are not suitable for long-term storage, such as semi-finished products and fragile samples such as liquids and powders, the retention period will be shortened to 7 days). After the retention period, STQ has the right to dispose of the sample arbitrarily without paying compensation or compensation to the customer and take no responsibility for the consequences that damages the customer's trade secrets and intellectual property rights due to the loss of the sample.
3. The delivery and return fee of the samples which need to do testing at STQ should be paid by the client. STQ will not bear the responsibility for the testing error that is caused by transporting, packaging and labelling.
4. The Clients shall always comply with the following before or during STQ providing its services:
 - a) provide sample(s) and relevant data, at the same time, guarantee the consistence of the sample(s)' name they declared with the sample(s) or the goods provided. Otherwise, STQ will not bear any relevant responsibilities;
 - b) giving timely instructions and adequate information to enable STQ to perform the services effectively;
 - c) supply, when requested by STQ, any equipment and personnel for the performance of the services;
 - d) take all necessary steps to eliminate or remedy any obstruction in the performance of the services;
 - e) inform STQ in advance of any hazards or dangers, actual or potential, associated with any order of samples or testing;
 - f) provide all necessary access for STQ's representative to enable the required services to be performed effectively;
 - g) ensure all essential steps are taken for safety of working conditions, sites and installations during the performance of services;
 - h) fully discharge all its liabilities under any contract like sales contract with a third party, whether or not a report or certificate has been issued by STQ, failing which STQ shall be under no obligation to the Clients.
5. Subject to STQ's accepting the Client's instructions, STQ will issue reports or certificates which reflect statements of opinion made with due care within the scope of instructions but STQ is not obliged to report upon any facts outside the instructions, if there were any dissidence about the report or certificate, the Client should provide the written declaration to STQ within 15 days after the date receiving the report or certificate, otherwise, STQ will not hear the case after the date limit.
6. STQ is irrevocably authorized by the Clients to deliver at its discretion the report or the certificate to any third party when instructed by the Clients or where it implicitly follows from circumstances, trade custom, usage or practice as determined by STQ.
7. A test report will be issued in confidence to the Clients and it will be strictly treated as such by STQ. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of STQ. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by STQ, to his customer, supplier or other persons directly concerned. STQ will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the report unless required by the relevant governmental authorities, laws or court orders.
8. Applicants wishing to use STQ's reports in court proceedings or arbitration shall inform STQ to that effect prior to submitting the sample for testing.
9. The report will refer only to the sample tested and will not apply to the bulk, unless the sampling has been carried out by STQ and is stated as such in the Report. Also, the report is only for reference.
10. Any documents containing engagements between the Clients and third parties like contracts of sale, letters of credit, bills of lading, etc. are regarded as information for STQ only and do not affect the scope of the services or the obligations accepted by STQ.
11. If the Clients do not specify the methods/standards to be applied, STQ will choose the appropriate ones and further information regarding the methods can be obtained by direct contact with STQ, for the in-house method, STQ will only provide the summary.
12. No liability shall be incurred by and no claim shall be made against STQ or its servants, agents, employees or independent contractors in respect of any loss or damage to any such materials, equipment and property occurring whilst at STQ or any work places in which the testing is carried out, or in the course of transit to or from STQ or the said work places, whether or not resulting from any acts, neglect or default on the part of any such servants, agents, employees or independent contractors of STQ.
13. STQ will not be liable, or accept responsibility for any loss or damage howsoever arising from the use of information contained in any of its reports or in any communication whatsoever about its said tests or investigations.
14. Except for term 11 and term 12, if the test sample is damaged due to the negligence of ZOTAC, the total compensation for loss and damage to the sample or loss to the customer shall not exceed twice of the test service fee.
15. In the event of STQ prevented by any cause outside STQ's control from performing any service for which an order has been given or an agreement made, the Clients shall pay to STQ:
 - a) the amount of all abortive expenditure actually made or incurred;
 - b) a proportion of the agreed fee or commission equal to the proportion (if any) of the service actually carried out by STQ, and STQ shall be relieved of all responsibility whatsoever for the partial or total non-performance of the required service.

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16. STQ shall be discharged from all liabilities for all claims for loss, damage or expense unless suit is brought within one calendar year after the date of the performance by STQ of the service relating to the claim or in the event of any alleged non-performance within one year of the date when such service should have been completed.
17. The Clients acknowledge that STQ does not, either by entering into a contract or by performing service, assume or undertake to discharge any duty of the Clients to any other persons. STQ is neither an insurer nor a guarantor and disclaims all liability in such capacity.
18. The Clients shall hold harmless and indemnify STQ and its officers, employees, agents or independent contractors against all claims made by any third party for loss, damage or expense of whatsoever nature including reasonable legal expenses relating to the performance or non-performance of any services to the extent that the aggregate of any such claims relating to any one service exceed the limits mentioned in Clause 13.
19. Any unauthorized alteration, forgery or falsification of the content or appearance of the report/certificate is unlawful and offenders may be prosecuted to the fullest extent of the law; in the event of improper use of the report, STQ reserves the right to withdraw it, and to adopt any other measures which may be appropriate.
20. Samples are deposited with and accepted by STQ on the basis that either they are insured by the Clients or the Clients assumes entire responsibility for loss through fire, theft, burglary or for damages arising in the course of analysis or handling, without recourse whatsoever to STQ or its servants, agent, employees or independent contractors.
21. If the requirements of the Clients require the analysis of samples by the Clients' or any third party's laboratory, STQ will only convey the result of the analysis without responsibility for its accuracy. If STQ is only able to witness an analysis by the Clients' or any third Party's laboratory STQ will only confirm that the correct sample has been analyzed without responsibility for the accuracy of any analysis or results.
22. In the event of any unforeseen additional time or costs being incurred in the course of carrying out any of its services, STQ shall be entitled to charge the Clients additional fees to reflect the additional time and costs incurred.
23. All rights (including but not limited to copyright) in any reports, certificates or other materials produced by STQ in the course of providing its services shall remain vested in STQ.
24. Unless otherwise agreed in written, payment should be arranged within 10 days after the invoice date or the debit note date. If the payment is overdue, the overdue penalty shall be calculated at 1‰ per day of the unpaid part till the actual payment date. All expenses, costs and losses incurred by STQ as a result of collecting or claiming the fees owed shall be borne by the customer, including but not limited to attorney fees, litigation fees, preservation fees, preservation guarantee fees, travel expenses, etc.
25. Test results may be transmitted by electronic means at the Client's request. However, it should be noted that electronic transmission cannot guarantee the information contained will not be lost, delayed or intercepted by third party. STQ is not liable for any disclosure, error or omission in the content of such messages as a result of electronic transmission.
26. If necessary, STQ may subcontract part of or all tests to competent subcontractors. If no objection is raised at the time of the Clients submitting the application, STQ shall assume the Client's approval.
27. This report/certificate does not relieve sellers/suppliers from their contractual responsibility with regards to the quality/quantity of this delivery nor does it prejudice the Client's right to claim towards sellers/suppliers for compensation for any apparent and/or hidden defects not detected during STQ's random inspection or testing or audit.
28. The testing data and result(s) in this report is(are) just for scientific research, education, internal quality control and product development etc.
29. STQ reserves the right to include Special Conditions in addition to the foregoing General Conditions if warranted by the particular circumstances of the required test or investigation [this clause is only effective when the other party has been informed].
30. The foregoing General Conditions shall in all respects be governed, construed, interpreted and operated in accordance with the relevant Chinese laws and regulations. Unless otherwise agreed, the arbitration shall take place in P. R. C
31. These General Condition have been drafted in Chinese and may be translated into other languages. In the event of any discrepancy, the Chinese version shall prevail.
32. In general sample will be stored for 30 days. But for liquid, powder, etc semi-product & fragile product, it will be stored only for 7 days.

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Test Report issued under the responsibility of:



**TEST REPORT
IEC 62133-2**

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 – Part 2: Lithium systems

Report Number..... : CN22NTK8 002

Date of issue..... : 2023-01-12

Total number of pages : 10 pages

Name of Testing Laboratory

preparing the Report : Shenzhen TCT Testing Technology Co., Ltd.

Applicant's name :

Address..... :

Test specification:

Standard : IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021

Test procedure : CB Scheme

Non-standard test method : N/A

TRF template used..... : IECEE OD-2020-F1:2021, Ed.1.4

Test Report Form No. : IEC62133_2C

Test Report Form(s) Originator : DEKRA Certification B.V.

Master TRF : Dated 2022-07-01

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This report is not valid as a CB Test Report unless signed by an approved IECEE Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description :	Rechargeable Polymer Li-ion Cell	
Trade Mark(s)		
Manufacturer	Same as applicant	
Model/Type reference	1260110	
Ratings	3.7V, 10000mAh, 37.0Wh	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	Shenzhen TCT Testing Technology Co., Ltd.
Testing location/ address :	2101&2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Street, Bao'an District, Shenzhen, China	
Tested by (name, function, signature) :	David Lu (Project Engineer)	<i>David Lu</i>
Approved by (name, function, signature) ... :	Aiden Liu (Reviewer)	<i>Aiden Liu</i>
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address :		
Tested by (name, function, signature) :		
Approved by (name, function, signature) ... :		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address :		
Tested by (name + signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ... :		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address :		
Tested by (name, function, signature) :		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ... :		
Supervised by (name, function, signature) :		

<p>List of Attachments (including a total number of pages in each attachment): See previous test report CN22NTK8 001</p>	
<p>Summary of testing:</p>	
<p>Tests performed (name of test and test clause): cl.7.1 Charging procedure for test purposes (for Cells); cl.7.3.1 External short circuit (Cells); cl.7.3.4 Thermal abuse (Cells); cl.7.3.5 Crush (Cells); cl.7.3.9 Design evaluation – Forced internal short circuit (Cells);</p> <p>The electrolyte type of this cell doesn't belong to polymer, and the addition test cl.7.3.9 was carried out to evaluate the cell.</p> <p>Tests are made with the number of cells specified in IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021 Table 1.</p>	<p>Testing location: Shenzhen TCT Testing Technology Co., Ltd. 2101&2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Street, Bao'an District, Shenzhen, China</p>
<p>Summary of compliance with National Differences (List of countries addressed): See previous test report CN22NTK8 001</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of <u>EN 62133-2:2017, EN 62133-2:2017/A1:2021</u></p>	
<p>Use of uncertainty of measurement for decisions on conformity (decision rule) :</p> <p><input checked="" type="checkbox"/> No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").</p> <p><input type="checkbox"/> Other:... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)</p> <p>Information on uncertainty of measurement: The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE. IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer. Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.</p>	

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

See previous test report CN22NTK8 001

Test item particulars.....:	
Classification of installation and use.....:	To be defined in final product
Supply Connection	Electrode plate
Recommend charging method declared by the manufacturer	Charging the cell with 2000mA constant current and 4.20V constant voltage until the current reduces to 200mA at ambient 20°C±5°C.
Discharge current (0,2 It A)	2000mA
Specified final voltage.....:	3.0V
Upper limit charging voltage per cell.....:	4.25V
Maximum charging current	10000mA
Charging temperature upper limit	45°C
Charging temperature lower limit.....:	0°C
Polymer cell electrolyte type.....:	<input type="checkbox"/> gel polymer <input type="checkbox"/> solid polymer <input checked="" type="checkbox"/> N/A
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item	2022-12-30
Date (s) of performance of tests	2023-01-03 to 2023-01-06
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60080-02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	Same as applicant

General product information and other remarks:

See previous test report CN22NTK8 001

The main features of the cell are shown as below (clause 7.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Charge Voltage	Final Voltage
1260110	10000mAh	3.7V	2000mA	2000mA	10000mA	10000mA	4.20V	3.0V

The main features of the cell are shown as below (clause 7.1.2):

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
1260110	4.25V	500mA	0°C	45°C

Description of change(s):

1. Changed lower charge temperature from "10°C" to "**0°C**".

For the above described modification the following tests were considered to be necessary:

Modification	Testing	Comments	Result
1	cl.7.3.1 External short circuit (Cells); cl.7.3.4 Thermal abuse (Cells); cl.7.3.5 Crush (Cells); cl.7.3.9 Design evaluation – Forced internal short circuit (Cells);	cl.7.3.1, cl.7.3.4, cl.7.3.5 and cl.7.3.9 were considered as necessary.	P

History of amendments and modifications:

Ref. No. CN22NTK8 001, dated 2022-12-01 (Original test report)

Ref. No. CN22NTK8 002, dated 2023-01-12 (1st Modification)

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
7	SPECIFIC REQUIREMENTS AND TESTS		P
7.1	Charging procedure for test purposes		P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer	See page 5.	P
	Prior to charging, the battery has been discharged at 20 °C ± 5 °C at a constant current of 0,2 It A down to a specified final voltage	See page 5.	P
7.1.2	Second procedure		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P
	After stabilization for 1 h to 4 h, at an ambient temperature of the highest test temperature and the lowest test temperature, respectively, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant current to constant voltage charging method	Charge temperature specified by manufacturer: 0-45°C. 0°C used for lower limit tests. 45°C used for upper limit tests.	P
7.3	Reasonably foreseeable misuse		P
7.3.1	External short-circuit (cell)	Tested complied.	P
	The cells were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		P
	Results: no fire, no explosion..... :	(See appended table 7.3.1)	P
7.3.4	Thermal abuse (cells)	Tested complied.	P
	Oven temperature (°C)..... :	130°C	—
	Results: no fire, no explosion	No fire. No explosion	P
7.3.5	Crush (cells)	Tested complied.	P
	The crushing force was released upon:		P
	- The maximum force of 13 kN ± 0,78 kN has been applied; or		P
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	Results: no fire, no explosion..... :	(See appended table 7.3.5)	P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
7.3.9	Design evaluation – Forced internal short-circuit (cells)	Tested complied.	P
	The cells complied with national requirement for:	France, Japan, Korea, Switzerland	—
	The pressing was stopped upon:		P
	- A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	400N for prismatic cell.	P
	Results: no fire.....:	(See appended table 7.3.9)	P

IEC 62133-2					
Clause	Requirement + Test			Result - Remark	Verdict
7.3.1	TABLE: External short circuit (cell)				P
Sample No.	Ambient (°C)	OCV at start of test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Results
Samples charged at charging temperature lower limit (0°C)					
TS221216312C 1#	55.0	4.19	83	35.6	P
TS221216312C 2#	55.0	4.19	83	35.4	P
TS221216312C 3#	55.0	4.19	82	35.2	P
TS221216312C 4#	55.0	4.18	81	34.7	P
TS221216312C 5#	55.0	4.18	82	34.8	P
Supplementary information: - No fire or explosion					

7.3.5	TABLE: Crush (cells)				P
Sample No.	OCV before test (Vdc)	OCV at removal of crushing force (Vdc)	Maximum force applied to the cell during crush (kN)	Results	
Samples charged at charging temperature lower limit (0°C)					
TS221216312C11#	4.17	4.17	13.02	P	
TS221216312C12#	4.19	4.19	13.03	P	
TS221216312C13#	4.18	4.18	13.01	P	
TS221216312C14#	4.19	4.19	13.00	P	
TS221216312C15#	4.18	4.18	13.01	P	
Note: A 13kN force applied at the wide side of prismatic cells. No voltage abrupt occurred.					
Supplementary information: - No fire or explosion					

IEC 62133-2					
Clause	Requirement + Test			Result - Remark	Verdict
7.3.9	TABLE: Forced internal short circuit (cells)				P
Sample No.	Chamber ambient T (°C)	OCV before test (Vdc)	Particle location ¹⁾	Maximum applied pressure (N)	Results
Samples charged at charging temperature lower limit (0°C)					
TS221216312C 16#	0	4.17	1	400	P
TS221216312C 17#	0	4.19	1	400	P
TS221216312C 18#	0	4.19	1	400	P
TS221216312C 19#	0	4.18	1	400	P
TS221216312C 20#	0	4.17	1	400	P
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					

-- End of Report --