

Test Report

Report No.:U00905220415112E

Query Password: QW9825

Date: Apr. 29, 2022

Page 1 of 5

Applicant: Henan Simate New Energy CO.,LTD**Contact information:** 100m west of the intersection of Huayuan road and West 2nd Ring Road in Biyang County**The following sample(s) was (were) submitted and identified by client as:**

Sample Name : Battery

Model No. : 102540

Manufacturer : Henan Simate New Energy CO.,LTD

Address : 100m west of the intersection of Huayuan road and West 2nd Ring Road in Biyang County

Received Date : Apr. 15, 2022

Testing Period : From Apr. 15, 2022 to Apr. 29, 2022

Test Request : Please refer to next page(s).

Test Result(s) : Please refer to next page(s).

Shen Zhen UONE Test Co., LTD.

Prepared by



Lili Zeng

Checked by



Lin Zhu

Approved by



Levent Liang



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Test Report

Report No.:U00905220415112E Query Password: QW9825 Date: Apr. 29, 2022 Page 2 of 5

Summary of Test Results:

<u>TEST REQUEST</u>	<u>CONCLUSION</u>
(1) European Directive 2006/66/EC & Amendment of 2013/56/EU Heavy Metals Content in Batteries and Accumulators and Waste Batteries and Accumulators Lead, Cadmium, Mercury content	PASS

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Test Material(s) List

Material No.	Description (Location)
1	Battery (whole)

Test result(s):

(1) Lead, Cadmium, Mercury content

Test Method: With reference to IEC 62321-5: 2013, IEC62321-4: 2013+A1:2017, analyzed by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES).

Substances	Pb	Cd	Hg	Conclusion
Limit (mg/kg)	40	20	5	
MDL (mg/kg)	2	2	2	
Material No.	Result (mg/kg)			PASS
1	N.D.	N.D.	N.D.	

- Note:**
1.

mg/kg = milligram per kilogram (ppm).
2.

MDL = method detection limit.
3.

N.D.=not detected(or less than MDL).
4.

The test results shown of Cadmium, Mercury and Lead Content are of total weight of the battery sample
5.

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

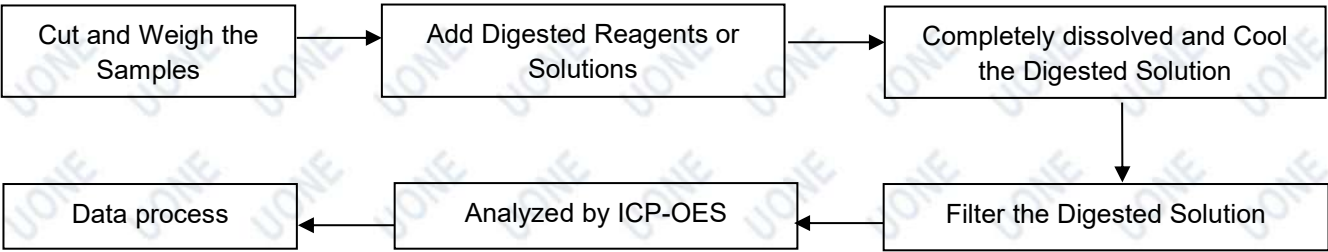
This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

Test Report

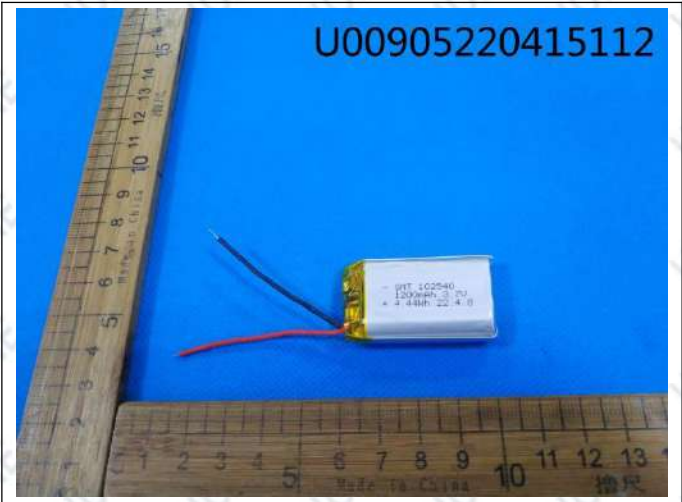
Report No.:U00905220415112E Query Password: QW9825 Date: Apr. 29, 2022 Page 4 of 5

Test Process Flow

1. Lead, Cadmium, Mercury



Photo(s) of Sample:



End of Report

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Report No.:U00905220415112E Query Password: QW9825 Date: Apr. 29, 2022 Page 5 of 5

Statement

- 1. The information as listed on the first page of this test report was all provided by the client except the received date, testing period, test result(s) and test request. The client shall be responsible for the representativeness of sample and authenticity of materials, for which UONE shall bear no responsibilities.
- 2. Unless otherwise stated the results shown in this report refer only the sample(s) tested and does not bear other joint and several liabilities.
- 3. This report is considered invalidated without the Special Seal for Inspection of the UONE, This report shall not be altered, increased or deleted.
- 4. Without written approval of UONE, this report shall not be reproduced in part or published as advertisement.
- 5. Objection should be issued in 15 days upon receiving the report, overdue opinion is inadmissible.
- 6. If the report is not stamped with the accreditation recognized seal, it will only be used for scientific research, education, and internal quality control activities, and is not used for the purpose of issuing supporting data to the society.

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中国认可
检验
INSPECTION
CNAS IB0078

危险物品
DANGEROUS GOODS

航空运输条件鉴别报告书

Identification and Classification Report for Air Transport of Goods

度有效
12月31日

此报告本年度有效
有效期至2022年12月31日

报告编号: PEKGZ202201220980GC050001

Issued No.:

生效日期:

2022. 01. 22

Effective Date:

委托单位: 深圳市斯马特电源有限公司

Applicant: Shenzhen Smart Power Co., Ltd.

物品名称: 锂离子聚合物电池 102540 3.7V 1200mAh 4.44Wh

Name of Goods: Lithium-ion Polymer Battery 102540 3.7V 1200mAh 4.44Wh

北京迪捷姆空运技术开发有限公司

Beijing DGM Air Transport Technology Development Co., Ltd.



报告书使用约定

Terms of the Using of the Report

1. 本公司依据本年度国际航协《危险品规则》以及委托人（托运人或其代理人）提供的物品及其运输信息，确定货物的航空运输条件并出具此报告书。

The report is issued by DGM China according to IATA *Dangerous Goods Regulations* published in the current year and the information of the goods and the information of its shipping provided by the applicant (shipper or his agent).

2. 依据鉴别的需要，本公司要求委托人提供真实、完整的货物样品及资料。

According to the demand of identification and classification, DGM China requires the applicant to provide true and exact sample and data of the cargo.

3. 委托人保证申报的物品和/或提供的样品与交运的货物是同一种物质。

The applicant guarantees that the declared goods and/or the sample who provides should be identical with the contents of cargo that is to be transported.

4. 本公司仅对样品的鉴别结果负责。

DGM China is only responsible for the identification and classification of the sample provided by the applicant.

5. 本报告书经主检员、审核人和批准人签字并加盖本公司印章后生效。

This report will be effective only after it is signed by the inspector, checker and approver, and stamped by DGM China.

6. 未经本公司书面批准，不得复制本报告书。

The duplicating of this report is prohibited without the written approval of DGM China.

7. 私自转让、复制、盗用、冒用、涂改、或以任何媒体形式篡改的报告书无效。

The report is invalid when anything of the following happens - illegal transfer, reproduce, embezzlement, imposture, modification or tampering in any media form.

8. 为适应国际航协《危险品规则》的年度变化，报告书仅在本年度内有效。

This report is only valid within the year in which the IATA *Dangerous Goods Regulations* is effective.

地址：北京首都国际机场货运北路天竺综合保税区BGS货运楼249室

邮编：101300

电话：010-69479673

传真：010-69479621

网址：www.dgmchina.com.cn

E-mail: test@dgmchina.com.cn



项目编号 Item No.	PEKGZ202201220980	签发日期 Issued Date	2022. 01. 22
鉴别目的 Identification Purpose	是否属于航空运输危险物品 Dangerous Goods or not restricted	鉴别日期 Identification Date	2022. 01. 22
鉴别依据 Identification Criteria	IATA DGR 63rd, 2022		
物品名称 Name of Goods	中文 Chinese	锂离子聚合物电池 102540 3.7V 1200mAh 4.44Wh	
	英文 English	Lithium-ion Polymer Battery 102540 3.7V 1200mAh 4.44Wh	
生产厂家 Manufacturer	河南省斯马特新能源有限公司 Henan Simate New Energy Co., Ltd.		
件数 Pieces		注：本栏内容为托运人或其代理人在使用本报告书时候填写的运输信息，不属于鉴定内容。运输信息与报告书的关联性以及实际运输货物与报告书的一致性由托运人或其代理人保证，如发生任何不一致由托运人或其代理人承担全部责任。 (请认真填写本栏内容，并盖章) 负责人： 联系方式：	
运单号 Air waybill No.			
目的港 Destination			
物品信息 Nature of the goods	<p>该样品为银色近长方体电池。 型号：102540 尺寸：(42.0×25.0×10.0) mm 每包装件中电池/电芯数量：520 每包装件中电池/电芯净重：9.62kg 该电池属于单芯锂电池。 该电池已经做好防短路措施并装入坚固的外包装内。 该锂电池不属于召回电池，不属于废弃和回收电池，并按照DGR3.9.2.6(e)规定的质量体系进行制造 根据委托方所提供的声明：本报告所述锂离子电池（或电芯）交付运输时，其荷电状态不超过设计额定容量的30%。 (注：单块电池重量约为18.5g。)</p> <p>This sample is silver almost cuboid battery. Model: 102540 Size: (42.0×25.0×10.0) mm Number of batteries / cells per package: 520 Net quantity of batteries/cells per package: 9.62kg The batteries belong to single cell lithium batteries. Batteries have been protected so as to prevent short circuits and packed in strong rigid outer packagings. The lithium batteries don't belong to batteries returned to the manufacturer for safety reasons, are not waste lithium batteries and not lithium batteries being shipped for recycling or disposal, are manufactured under a quality management program as described in 3.9.2.6(e). Lithium ion cells and batteries must be offered for transport at a state of charge(SoC) not exceeding 30% of their rated design capacity.</p>		



项目编号 Item No.		PEKGZ202201220980			
物品名称 Name of Goods	中文 Chinese	锂离子聚合物电池 102540 3.7V 1200mAh 4.44Wh			
	英文 English	Lithium-ion Polymer Battery 102540 3.7V 1200mAh 4.44Wh			
鉴别结论 Conclusions		<p>该货物为锂离子/聚合物电池，单独包装。额定瓦特小时为4.44Wh。已通过 UN38.3 测试，已通过包装件1.2米跌落试验，每个包装件上均有锂电池标记。</p> <p>参考有关资料，根据DGR有关规定，该物质分类识别为第9类（或项）危险品，UN3480。 This goods is lithium ion/polymer battery,packed individually.Watt-hour rating is 4.44Wh.Each battery is of a type proved to meet the Requirements of each test in the UN MANUAL OF TESTS AND CRITERIA, Part III, sub-section 38.3.Each package is capable of withstanding a 1.2m drop test in any orientation without damage to the cells contained therein, without shifting of the contents so as to allow cell to cell contact and without release of contents,Each package is marked with lithium battery mark.</p> <p>According to IATA DGR this substance is classified as dangerous goods Class (or division)9,UN3480.</p>			
建议运输 条件 Suggestion for Transport Condition	UN/ID 编号 UN/ID No.	运输专用名称 Proper Shipping Name		类或项 Class or Div. (次要危险性) (Subsidiary Risk)	包装等级 Packing Group
	UN3480	Lithium ion batteries		9	/
	包装说明 Packing Inst.	客货机 Passenger and Cargo Aircraft	Forbidden		
		仅限货机 Cargo Aircraft only	965, IB		
注意事项 Remarks		本货物仅限货机运输。 The goods can be transported on cargo aircraft only.			
主检员 Prepared by:		审核人 Checked by:		批准人 Approved by:	
张园梁		梁心主		杨敏开	
				报告单位（盖章） Stamp	
				CHINA	

制单： 杨敏开

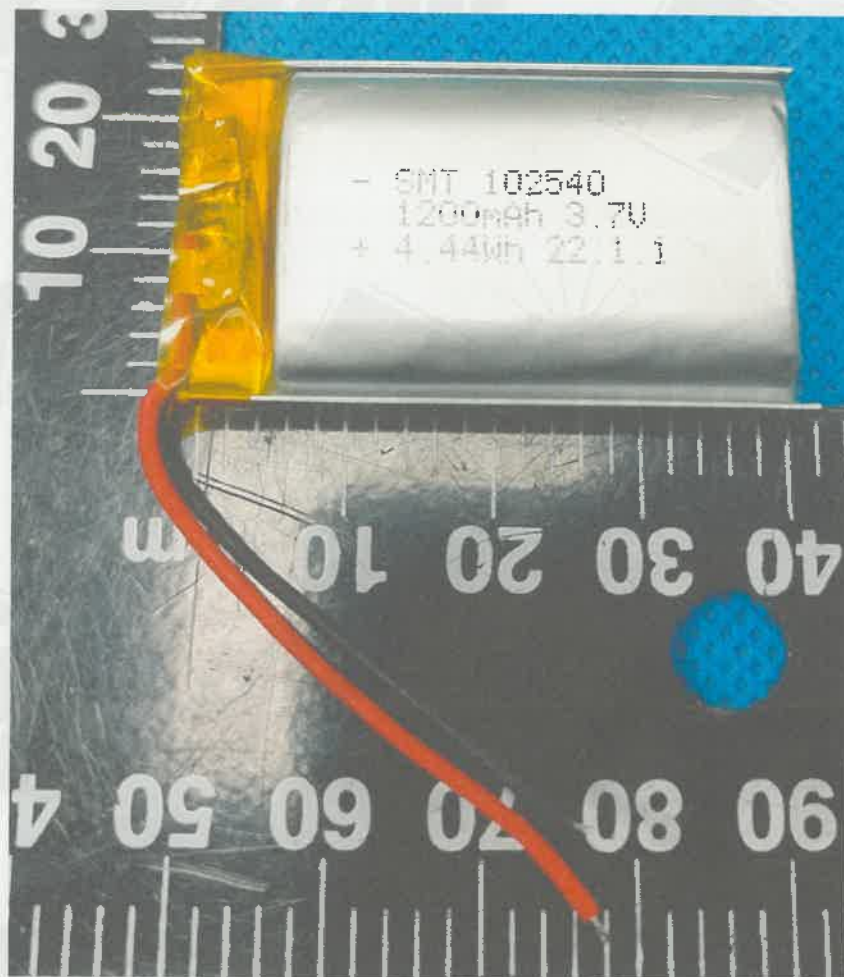


北京迪捷姆空运技术开发有限公司

项目编号: PEKGZ202201220980

物品名称: 锂离子聚合物电池 102540 3.7V 1200mAh 4.44Wh

电池/电芯 Battery / Cell:



包装件 Package:



锂电池 UN38.3 试验概要 Lithium Battery Test Summary

项目编号: PEKGZ202201220980

单位信息 Company Information					
委托单位 Consignor	深圳市斯马特电源有限公司 Shenzhen Smart Power Co., Ltd. 深圳市龙华大浪华霆路 17 号华腾工业园东 5 楼 East 5th Floor, Huateng Industrial Park, 17 Huating Road, Dalang Street, Longhua New District, Shenzhen, China				
生产单位 Manufacturer	河南省斯马特新能源有限公司 Henan Simate New Energy Co., Ltd. 泌阳县花园路与西二环路交叉口西 100 米 100m West Of The Intersection Of Huayuan Road And West 2nd Ring Road In Biyang County, China 电话/Tel: +86-15938097890 邮箱/Mail: 2749086819@qq.com 网址/Website: /				
测试单位 Test Lab	广东储能检测技术有限公司 Guangdong ESTL Technology Co., Ltd. 广东省东莞市松山湖园区总部二路 9 号 1 栋 1 单元 101、201-208 室 Room 101, 201-208, Unit 1, Building 1, No. 9 Headquarters 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China. 电话/Tel: 0769-85075888 邮箱/Mail: gdestl@gdestl.com 网址/Website: www.gdestl.com				
电池信息 Battery Information					
名称 Name	锂离子聚合物电池 Lithium-ion Polymer Battery	电池/电芯类别 Battery/Cell Classification		单电芯锂离子电池 Single Cell Li-ion Battery	
型号 Type	102540	商标 Trademark		/	
额定电压(V) Normal Voltage(V)	3.7V	额定容量(mAh) Rated Capacity(mAh)		1200mAh	
额定能量(Wh) Watt-hour rating (Wh)	4.44Wh	外观/Appearance		银色近长方体 Approximate Silver Cuboid	
质量(g)/Mass(g)	18.5g	锂含量(g)/Li Content(g)		不适用 N/A	
测试信息 Test Information					
测试报告编号 Test Report Number	S03A21120558U01101		测试报告签发日期 Date of Test Report	2022.01.07	
测试标准 Edition of UN Manual of Tests and Criteria Used	联合国《关于危险货物运输的建议书-试验和标准手册》(第 7 版) 38.3 节 UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7/Subsection 38.3				
T.1: 高度模拟 Altitude Simulation	通过 Pass	T.2: 温度试验 Thermal Test	通过 Pass	T.3: 振动 Vibration	通过 Pass
T.4: 冲击 Shock	通过 Pass	T.5: 外部短路 External Short Circuit	通过 Pass	T.6: 撞击/挤压 Impact/Crush	通过 Pass
T.7: 过度充电 Overcharge	通过 Pass	T.8: 强制放电 Forced Discharge	通过 Pass		
UN38.3.3(f)	不适用 N/A		UN38.3.3(g)	不适用 N/A	
签名 Signatory 职务 Title	张园梁 检验员		签发日期 Issued Date 2022.01.22		



非限制性货物
Not subject to these
Regulations

货物运输条件鉴别报告书

Identification and Classification Report For Sea Transport of
Goods

报告编号 Report No.: S03A21120558H01101

物品名称: 锂离子聚合物电池 102540
Name of Goods: Lithium-ion Polymer Battery 102540

委托单位: 深圳市斯马特电源有限公司
Applicant: Shenzhen Smart Power Co., Ltd.

签发日期: 2022-01-07
Issue Date:

广东储能检测技术有限公司
Guangdong ESTL Technology Co., Ltd.



货物运输条件鉴别报告书

Identification and Classification Report For Sea Transport of Goods

委托单位 Applicant	深圳市斯马特电源有限公司 Shenzhen Smart Power Co., Ltd.
委托单位地址 Applicant Address	深圳市龙华大浪华霆路 17 号华腾工业园东 5 楼 East 5th Floor, Huateng Industrial Park, 17 Huating Road, Dalang Street, Longhua New District, Shenzhen, China
制造商 Manufacturer	河南省斯马特新能源有限公司 Henan Simate New Energy Co., Ltd.
制造商地址 Manufacturer Address	泌阳县花园路与西二环路交叉口西 100 米 100m West Of The Intersection Of Huayuan Road And West 2nd Ring Road In Biyang County, China
物品信息 Nature of the goods	<p>该物品是锂离子聚合物电池 102540, 单独包装。 This goods is Lithium-ion Polymer Battery 102540, independent packing. 规格参数/Specifications: 3.7V 1200mAh 4.44Wh 电池尺寸/Battery Size: 10.0mm*25.0mm*42.0mm 每包装件中电池/电芯数量/Number of batteries/cells per package: 520pcs 每一包装件净重/Net quantity of per package: 9.62kg 每一包装件毛重/Gross weight of each package: 10.6kg 该电池的 UN38.3 检验报告由广东储能检测技术有限公司提供。 报告书编号为: S03A21120558U01101。 The battery UN38.3 inspection report by Guangdong ESTL Technology Co., Ltd. Report No.: S03A21120558U01101. 该电池的 1.2m 跌落报告由广东储能检测技术有限公司提供。 报告书编号为: S03A21120558D01101。 The battery 1.2m Test Report by Guangdong ESTL Technology Co., Ltd. Report No.: S03A21120558D01101. 注: 每一单电池必须做好防短路措施, 并装入坚固外包装内。 Note: each battery must be protected against short circuit and packed in strong outer packing.</p>
鉴别日期 Identification Date	2022-01-07
报告有效期 The period of validity	2022 年 01 月 07 日至 2022 年 12 月 31 日
鉴别依据 Identification Criteria	IMDG CODE(Amdt 40-20)
备注 Comment	根据 IMDG CODE 特殊规定 188 不受限制。 Not Restricted As per IMDG CODE Special Provision 188.
检测 Tested by	审核 Reviewed by 郭倩倩 批准 Approved by 

货物运输条件鉴别报告书

Identification and Classification Report For Sea Transport of Goods

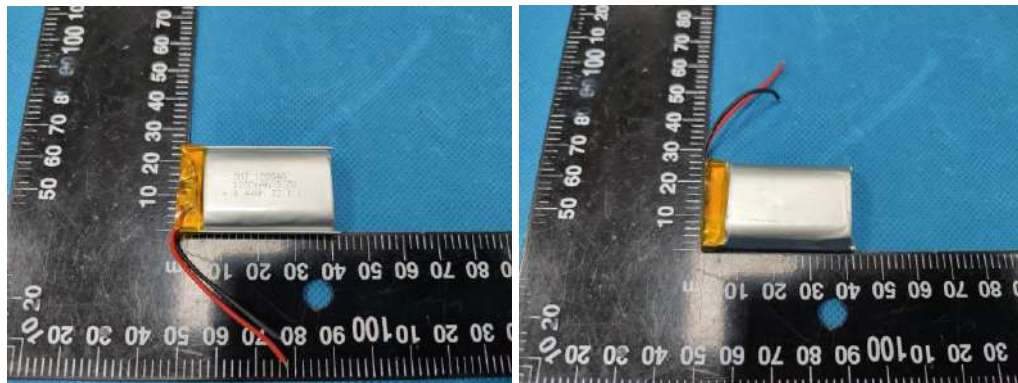
项目编号 Item No.	S03A21120558H01101	
物品名称 Name of Goods	中文名称 Name of Chinese	锂离子聚合物电池 102540
	英文名称 Name of English	Lithium-ion Polymer Battery 102540
鉴别项目名称 Item	检查结果 Inspection Result	
该电池额定瓦特小时数为 4.44Wh。 Watt-hour rating of the battery is 4.44Wh.	≤20Wh	
锂电池已通过 UN38.3 测试。 Each battery is of a type proved to meet the Requirements of each test in the UN MANUAL OF TESTS AND CRITERIA, Part III, sub-section 38.3.	符合 Conform	
电池按照规定的质量管理体系进行制造。 Batteries be manufactured under a quality management programme.	符合 Conform	
该锂电池不属于召回电池, 不属于废弃和回收电池。 The Lithium batteries do not belong to batteries returned to the manufacturer for safety reasons, are not waste lithium batteries and not lithium batteries being shipped for recycling or disposal.	符合 Conform	
通过包装件 1.2 米跌落试验。 Each package is capable of withstanding a 1.2m drop test in any orientation.	符合 Conform	
包装件需要按照特殊规定 188 的要求进行适当标记。 The package must be appropriately marked according to special provision 188.	符合 Conform	
每票货物均有随附文件说明: 包装件内装锂离子电池或电芯; 必须小心操作。如包装件破损, 有易燃危险性; 包装件破损时应采取的特殊措施, 包括必要时的重新包装; 应急电话号码。 Each consignment is accompanied with a document with an indication that: the package contains lithium ion cells or batteries; the package must be handled with care, and that a flammability hazard exists if the package is damaged; special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary and a telephone number for additional information.	不适用 Not applicable	

Photos of Samples and Labels/样品照片及标识

包装件 Package:



电池 Battery:



声明

Declaration

1. 本报告无批准人、审核人及鉴定人签名无效。

The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.

2. 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 ESTL within 15 days.

3. 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 ESTL.

4. 本报告仅对送检样品负责。

The test report is valid for the tested samples only.

5. 本报告涂改无效。

The test report is invalid if altered.

--- 报告结束 ---

--- End of report ---



材料安全数据表

Material Safety Data Sheet

报告编号 Report No.: S03A21120558M01101

样品名称: 锂离子聚合物电池
Sample Name: Lithium-ion Polymer Battery

样品型号: 102540
Sample Model:

委托单位: 深圳市斯马特电源有限公司
Applicant: Shenzhen Smart Power Co., Ltd.

签发日期: 2022-01-07
Issue Date:

广东储能检测技术有限公司

Guangdong ESTL Technology Co., Ltd.



第一部分 产品和厂商信息 Section 1 Identification of the product and supplier	
样品名称 Sample Name	锂离子聚合物电池 Lithium-ion Polymer Battery
样品型号 Sample Model	102540
规格 Rating	3.7V 1200mAh 4.44Wh
测试实验室 Testing laboratory	广东储能检测技术有限公司 Guangdong ESTL Technology Co., Ltd.
测试地址 Testing Address	广东省东莞市松山湖园区总部二路9号1栋1单元101、201-208室。 Room 101, 201-208, Unit 1, Building 1, No. 9 Headquarters 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China.
委托单位 Applicant	深圳市斯马特电源有限公司 Shenzhen Smart Power Co., Ltd.
委托单位地址 Applicant Address	深圳市龙华大浪华霆路 17 号华腾工业园东 5 楼 East 5th Floor, Huateng Industrial Park, 17 Huating Road, Dalang Street, Longhua New District, Shenzhen, China
制造商 Manufacturer	河南省斯马特新能源有限公司 Henan Simate New Energy Co., Ltd.
制造商地址 Manufacturer Address	泌阳县花园路与西二环路交叉口西100米 100m West Of The Intersection Of Huayuan Road And West 2nd Ring Road In Biyang County, China
鉴定依据 Inspection according to	依据GB/T16483-2008&ISO11014:2009编制 According to GB/T16483-2008&ISO11014:2009
紧急联系电话 Emergency telephone call	+86-15938097890
测试日期 Tested date	2021-12-21 to 2022-01-06
生效时间 Effective Date	2022-01-07

检测 Tested by

王宇

审核 Reviewed by

郭倩倩

批准 Approved by

张



第二部分 成分/组成信息

Section 2 Composition/Information on Ingredient

危险成分 (化学名称) Hazardous Ingredients (Chemical Name)	含量及含量百分比(%) Concentration or concentration ranges (%)	CAS编号 CAS Number
钴酸锂 Lithium Cobalt Oxide	49.5	12190-79-3
聚偏氟乙烯 PVDF	0.33	24937-79-9
铝 Aluminium	7.6	7429-90-5
石墨 Graphite	16.3	7782-42-5
丁苯橡胶 SBR	0.05	9003-55-8
羧甲基纤维素 Carboxymethylcellulose	0.28	9000-11-7
铜 Copper	6.96	7440-50-8
镍 Nickel	0.06	7440-02-0
六氟磷酸锂 Lithium Hexafluorophosphate	10.96	21324-40-3
聚乙烯 Polyethylene	4.03	9002-88-4
尼龙 Nylon	3.93	24937-16-4

第三部分 主要危险性鉴定

Section 3 Hazards Identification

爆炸危险性 Explosive risk	该物品不属于爆炸危险品 This article does not belong to the explosion dangerous goods
易燃危险性 Flammable risk	该物品不属于易燃危险品 This article does not belong to the flammable material
氧化危险性 Oxidation risk	该物品不属于氧化危险品 This article does not belong to the oxidation of dangerous goods
毒害危险性 Toxic risk	该物品不属于毒害危险品 This article does not belong to the toxic dangerous goods
放射危险性 Radioactive risk	该物品不属于放射危险品 This article does not belong to the radiation of dangerous goods
腐蚀危险性 Mordant risk	该物品不属于腐蚀危险品 This article does not belong to the corrosion of dangerous goods
其他危险性 other risk	该物品为锂离子聚合物电池, 瓦时率为4.44Wh。 This article is the Lithium-ion Polymer Battery, Watt hour rate 4.44Wh.

第四部分 急救措施

Section 4 First aid measures

眼睛接触: 提起眼皮用大量水冲洗眼睛至少15分钟, 立即就医。

After Eye Contact: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

皮肤接触: 脱掉被污染的衣服, 并用大量水或淋浴冲洗皮肤15分钟, 立即就医。

After Skin Contact: Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

吸入: 如有吸入, 迅速脱离现场至新鲜空气处, 如果停止呼吸, 进行人工呼吸。如果呼吸困难, 供给氧气。

After Inhalation: If inhaled, quickly leave the site to fresh air. If you stop breathing, perform artificial respiration. If breathing is difficult, supply oxygen.

食入: 如有知觉, 请用水冲洗口腔, 就医。

After Ingestion: If swallowed, wash out mouth with water provided person is conscious Call a physician.

第五部分 消防措施

Section 5 Fire-fighting measures

危险特性: 在火灾时可释放有害浓烟、气体或者蒸汽。

Characteristics of Hazard: Toxic fumes; gases or vapors may evolve on burning.

有害燃烧产物: 一氧化碳和二氧化碳、HF、氟磷化物。

Hazardous Combustion Products: CO, CO₂, HF, phosphorus fluoride.

灭火方法及灭火剂: 对锂电池, 大量冷水是一个有效的灭火剂。不要使用温或热水。不要使用哈龙类灭火材料。可使用干粉、沙、土。

Fire-extinguishing Methods and Extinguishing Media: Copious amounts of cold water are an effective extinguishing medium for lithium batteries. Don't use warm or hot water. Don't use Halon type extinguishing material.

May use dry powder, sand, earth.

灭火注意事项: 消防人员须佩戴防毒面具、穿全身消防服。

Attention in Fire-extinguishing: The Firemen should put on antigas masks and full fire-fighting suits.

第六部分 泄漏应急处理

Section 6 Accidental release measures

当电池发生泄漏，液体可以用砂，土，或其他惰性物质吸收，受污染的区域应同时通风。

When leakage of batteries happens, liquid could be absorbed with sands, earth, or other inert substance, and the contaminated area should be ventilated meantime.

未放热或燃烧的破损电池，应装入密封的塑料袋或容器。

Damaged batteries that are not hot or burning should be placed in a sealed plastic bag or container.

第七部分 操作处置和储存

Section 7 Handling and storage

操作注意事项：储存时远离食物和水源。吃饭喝水前彻底清洗双手。储有化学物的容器搬用时需防止静电的产生和积聚。

Precautions for safe handling: Consumption of food and beverage should be avoided in work areas. Wash hands with soap and water before eating, drinking. Ground containers when transferring liquid to prevent static accumulation and discharge.

有关火灾及防止爆炸的资料：电池在拆开、挤压、遇火或高温情况下，会引起起火或爆炸，严禁短路或非正确操作。

Information about fire and explosion protection: Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

储存注意事项：储存在一个低温，干燥，通风良好的环境。远离热源，避免长时间阳光照射。未使用时密封容器。

Conditions for safe storage, including any incompatibilities: Requirements to be met by storerooms and receptacles. Store in a cool, dry, well-ventilated place. Keep away from heat, avoiding the long time of sunlight.

第八部分 接触控制 / 个人防护

Section 8 Exposure controls/personal protection

最高容许浓度：没有适用标准

Maximum Allowable Concentration: No Standard available

工程控制：操作未破损的电池，没有工程控制要求。对于破损的电池，个人防护用品应包括 化学品防护手套和安全眼镜。

Engineering Controls: no engineering controls are required for handling batteries that have not been damaged. Personal protective equipment for damaged batteries should include chemical resistant gloves and safety glasses.

第九部分 理化特性

Section 9 Physical and Chemical Properties

有关基本物理及化学特性的信息 Information on basic physical and chemical properties	
外观 Appearance	银色 Silver
形状 Form	方形 Prismatic
气味 Odour	无味 Odorless

第十部分 稳定性和反应活性

Section 10 Stability and reactivity

稳定性: 常温常压稳定。

Stability: Stable under normal temperatures and pressures.

禁配物: 氧化剂。

Incompatibility: Oxidizing agents.

避免接触的条件: 热和明火、短路和水。

Conditions to Avoid: Heat and open flame, short circuit, and water.

聚合危害: 不会发生。

Hazardous polymerization: Will not occur.

分解产物: 一氧化碳、二氧化碳、HF、氟磷化物。

Decomposition Products: CO, CO₂, HF, Phosphorus fluoride.

第十一部分 毒理性资料 Section 11 Toxicological information

标志及症状: 无, 除非电池破裂。

Signs & symptoms: None, unless battery ruptures.

内部物质暴露的情况下, 蒸汽烟雾可能对眼睛和皮肤的刺激性。

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

吸入: 对肺有刺激性。

Inhalation: Lung irritant.

皮肤接触: 对皮肤有刺激性。

Skin contact: Skin irritant.

眼睛接触: 对眼睛有刺激性。

Eye contact: Eye irritant.

食入: 吞下中毒。

Ingestion: Poisoning if swallowed.

下列情况下会危害人员身体健康: 如果与电池内部材料直接接触, 皮肤可能会出现干燥、灼烧等 轻微或严重的刺激, 并且损坏靶器官的神经, 肝脏和肾脏。

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

第十二部分 生态学资料 Section 12 Ecological information

生态毒性: 无

Ecological Toxicity: N/A

生物降解性: 无

Biodegradability: N/A

非生物降解性: 无

Non-biodegradability: N/A

其它有害作用: 该物质对环境有无明显危害。

Other Hazardous: Will not effect environmental evidently.

第十三部分 废弃处置

Section 13 Disposal consideration

废弃处置方法: 建议遵照国家和地方法规处置或再利用。

Waste Treatment: Recycle or dispose of in accordance with government, state & local regulations.

废弃注意事项: 废电池不能被当作普通垃圾。不能扔进火中或置于高温下。不能解体, 刺穿, 破碎或类似的处理。最好的办法是回收利用。

Attention for Waste Treatment: Deserted batteries couldn't be treated as ordinary trash.

Couldn't be thrown into fire or placed in high temperature. Couldn't be dissected, pierced, crushed or treated similarly. Best way is recycling.

第十四部分 运输信息

Section 14 Transport information

UN 编号 UN NO.	UN3480 UN3481
运输专有名称 Proper Shipping Name	UN3480 锂离子电池 UN3480 Lithium Ion Batteries UN3481 锂离子电池与设备打包 UN3481 Lithium Ion Batteries Packed With Equipment UN3481 锂离子电池装在设备中 UN3481 Lithium Ion Batteries Contained In Equipment
运输标签 Label for conveyance	锂电池操作标签 Lithium Battery Label 9类危险品标签 Class 9 Hazard Label 仅限货机标签 Cargo aircraft Only Label

危险品规例规定, 运输前, 每一个电池设计通过联合国《试验和标准手册》第七修订版第38.3节所载的测试。报告编号: S03A21120558U01101。

The dangerous goods regulations require that each battery design be subject to tests contained in UNITED NATIONS the "Manual of Test and Criteria" (ST/SG/AC.10/11/Rev.7) Section 38.3.

Report No.: S03A21120558U01101.

危险性分类:

该电池包装应遵守IATA DGR 63版包装说明965/966/967的运输要求。

The package of battery should be complied with the requirements of Packing Instruction 965/966/967 of IATA DGR 63rd Edition for transportation.

该电池包装遵守IMDG (40-20) 或“关于危险货物运输的规章范本” 21st的特殊规定188。

The package of battery should be complied with the requirements of 188 of IMDG (40-20) or the <<Recommendations On The Transport Of Dangerous Goods-Model Regulations>> (21st).

第十五部分 法规信息

Section 15 Regulation information

法规信息:

联合国《关于危险货物运输的建议书规章范本》（21版）、国际航空运输协会《危险品规则》（63版）、《国际海运危险货物规则》（IMDG CODE）（40-20版）、《国际危险货物道路运输欧洲协定》（ADR）（2021版）、《国际危险货物铁路运输欧洲协定》（RID）（2021 版）

Regulatory information: Recommendations on the transport of dangerous goods-model Regulations 21st, IATA dangerous goods regulations 63rd, International Maritime Dangerous Goods Code (40-20), European Agreement concerning the International Carriage of Dangerous Goods by Road (2021), Regulations concerning the International Carriage of Dangerous Goods by Rail (2021)

第十六部分 其他信息

Section 16 Other information

此信息并非对所有由河南省斯马特新能源有限公司生产的电池均有效。此信息来自可靠来源，但不对所包含信息的完整性和准确性做任何保证。广东储能检测技术有限公司对因电池使用不当造成的任何损坏或损失不承担任何责任，用户应掌握正确的使用方法并对电池的使用负责。

This information is not effective to all the batteries manufactured by Henan Simate New Energy Co., Ltd. This information comes from reliable sources, but no warranty is made to the completeness and accuracy of information contained. Guangdong ESTL Technology Co., Ltd. doesn't assume responsibility for any damage or loss because of misuse of batteries. User's should grasp the correct use method and be responsible for the use of batteries.

Photos of Samples and Labels/样品照片及标识



声明 Declaration

1. 本报告无批准人、审核人及鉴定人签名无效。

The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.

2. 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 ESTL within 15 days.

3. 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 ESTL.

4. 本报告仅对送检样品负责。

The test report is valid for the tested samples only.

5. 本报告涂改无效。

The test report is invalid if altered.

--- 报告结束 ---

--- End of report ---



中国认可
国际互认
检测
TESTING
CNAS L13753



UN38.3 测试报告

UN38.3 Test Report

报告编号 Report No.: S03A21120558U01101

样品名称: 锂离子聚合物电池
Sample Name: Lithium-ion Polymer Battery

样品型号: 102540
Sample Model:

委托单位: 深圳市斯马特电源有限公司
Applicant: Shenzhen Smart Power Co., Ltd.

签发日期: 2022-01-07
Issue Date:

广东储能检测技术有限公司

Guangdong ESTL Technology Co., Ltd.



样品描述 Sample Description			
样品名称 Sample Name	锂离子聚合物电池 Lithium-ion Polymer Battery	样品型号 Sample Model	102540
测试实验室 Testing laboratory	广东储能检测技术有限公司 Guangdong ESTL Technology Co., Ltd.		
测试地址 Testing Address	广东省东莞市松山湖园区总部二路9号1栋1单元101、201-208室。 Room 101, 201-208, Unit 1, Building 1, No. 9 Headquarters 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China.		
委托单位 Applicant	深圳市斯马特电源有限公司 Shenzhen Smart Power Co., Ltd.		
委托单位地址 Applicant Address	深圳市龙华大浪华霆路 17 号华腾工业园东 5 楼 East 5th Floor, Huateng Industrial Park, 17 Huating Road, Dalang Street, Longhua New District, Shenzhen, China		
制造商 Manufacturer	河南省斯马特新能源有限公司 Henan Simate New Energy Co., Ltd.		
制造商地址 Manufacturer Address	泌阳县花园路与西二环路交叉口西100米 100m West Of The Intersection Of Huayuan Road And West 2nd Ring Road In Biyang County, China		
电芯生产单位 Factory of Cell	河南省斯马特新能源有限公司 Henan Simate New Energy Co., Ltd.		
测试标准 Standard	联合国《试验和标准手册》第七修订版第38.3节 UNITED NATIONS the "Manual of Test and Criteria" (ST/SG/AC.10/11/Rev.7) Section 38.3.		
接样日期 Date of sample receipt	2021-12-21		
测试日期 Tested date	2021-12-21 to 2022-01-06		
检验结论 Test conclusion: The Lithium-ion Polymer Battery submitted by Shenzhen Smart Power Co., Ltd. are tested according to UNITED NATIONS the "Manual of Test and Criteria" (ST/SG/AC.10/11/Rev.7) Section 38.3. The test items are full items. The test results comply with the relevant requirements of the standard. 由深圳市斯马特电源有限公司送检的锂离子聚合物电池，依据联合国《试验和标准手册》第七修订版第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。			

检测 Tested by

王宇

审核 Reviewed by

郭倩倩

批准 Approved by

张



第 3 页 共 17 页

样品信息 Sample Information			
标称电压 Nominal Voltage	3.7V	额定容量 Rated Capacity	1200mAh
瓦时 Watt-hour	4.44Wh	商标 Trade mark	--
限制电压 Limited Charge Voltage	4.2V	放电终止电压 Discharge Cut-Off Voltage	3.0V
充电电流 Charge Current	240mA	最大持续充电电流 Max. Continuous Charge Current	1200mA
放电电流 Discharge Current	240mA	最大持续放电电流 Max. Continuous Discharge Current	1200mA
充电截止电流 End Charge Current	24mA	电池尺寸 Battery dimensions	10.0mm*25.0mm*42.0mm
电芯型号 Cell Model	102540	电芯容量 Cell Rated Capacity	1200mAh
组合方式 Compound mode	1S1P		
Description of the sampling procedure: / 取样程序的说明: /			
Description of the deviation from the standard, if any: / 测试结果不符合标准项的说明: /			
Remarks/备注: 1. 本报告中以点代替小数点。 Throughout this report a comma is used as the decimal separator. 2. 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”.			

Summary of testing:**Tests performed (name of test and test clause):**

Test items	Sample Number
T.1: Altitude simulation / 高度模拟	B1# - B10#
T.2: Thermal test / 温度试验	
T.3: Vibration / 振动	
T.4: Shock / 冲击	
T.5: External short circuit / 外接短路	
T.6: Crush / 挤压 or Impact / 撞击	C1# - C10#
T.7 Overcharge / 过充电	B11# - B18#
T.8: Forced discharge / 强制放电	C11# - C30#

The sample's status is good.

样品状况良好。

Single cell batteries of B1#~B5# B11#~B14# are full charged after one cycle;

单电芯电池B1#~B5# B11#~B14#为1次循环满电状态;

Single cell batteries of B6#~B10# B15#~B18 are full charged after twenty-five cycles;

单电芯电池B6#~B10# B15#~B18为25次循环满电状态;

Rechargeable cells of C1#~C5# are 50% charged after one cycle;

可充电电芯C1#~C5#为1次循环后50%充电状态;

Rechargeable cells of C6#~C10# are 50% charged after twenty-five cycles;

可充电电芯C6#~C10#为25次循环后50%充电状态;

Rechargeable cells of C11#~C20# are full discharged after one cycle;

可充电电芯C11#~C20#为1次循环完全放电状态;

Rechargeable cells of C21#~C30# are full discharged after twenty-five cycles;

可充电电芯C21#~C30#为25次循环完全放电状态;

Testing location:**测试地点:**

广东储能检测技术有限公司

Guangdong ESTL Technology Co., Ltd.

广东省东莞市松山湖园区总部二路9号1栋1单元101、201-208室。

Room 101, 201-208, Unit 1, Building 1, No. 9 Headquarters 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China.

Test Procedure:

1. Each battery type is subjected to tests T.1 to T.8. Tests T.1 to T.5 are conducted in sequence on the same battery. Tests 6 and 8 are conducted using not otherwise tested batteries. Test T.7 may be conducted using undamaged batteries previously used in Tests T.1 to T.5 for purposes of testing on cycled batteries.

每一种类型的电池均应进行T.1至T.8项试验。电池必须按顺序在相同的一组电池上进行试验T.1至T.5。试验T.6和T.8应使用未另外试验过的电池。试验T.7可以使用先前在试验T.1至T.5中使用过的未损坏电池进行，以便测试进行在循环过的电池上。

2. In order to quantify the mass loss, the following procedure is provided:

$$\text{Mass loss(\%)} = (M_1 - M_2) / M_1 \times 100$$

为了量化质量损失，可用以下公式计算：质量损失(%)=(M₁-M₂)/M₁×100

Where M₁ is the mass before the test and M₂ is the mass after the test. When mass loss does not exceed the values in Table below, it is considered as "no mass loss".

式中：M₁是试验前的质量，M₂是试验后的质量。如果质量损失不超过下表所列的数值，应视为“无质量损失”。

Mass M of cell or battery 电芯或电池的质量	Mass loss limit 质量损失限值
M<1g	0.5%
1g≤M≤75g	0.2%
M>75g	0.1%

3. In test T.1 to T.4, batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test battery after testing is not less than 90% of its voltage immediately prior to this procedure.

在测试T.1至T.4中，电池须满足无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

Photos of Samples and Labels/样品照片及标识



Photos of Samples and Labels/样品照片及标识



38.3.4	Procedure / 测试步骤		判定 Verdict
38.3.4.1	Test 1: Altitude simulation / 测试1: 高度模拟		P
	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). 试验电芯和电池在温度为20±5°C, 大气压力为不大于11.6kpa 的环境中贮存不少于6 个小时。		P
	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芯和电池。 3. No leakage, no venting, no disassembly, no rupture and no fire. 样品应无漏液、无排气、无解体、无破裂以及无着火现象的发生。	No leakage, no venting, no disassembly, no rupture and no fire. 无漏液、无排气、无解体、无破裂以及无着火现象。 The data see table 1. /测试数据见表1。	P
38.3.4.2	Test 2: Thermal test / 测试 2: 温度试验		P
	Test cells and batteries are to be stored for 试验电芯和电池存储条件如下: 1. one temperature cycle: 72±2°C(6h) — -40±2°C(6h). 一次温度循环为72±2°C(6h) — -40±2°C(6h). 2. The maximum time interval between test temperature extremes is 30 minutes. 温度转换最大间隔时间为30mins。 3. This procedure is to be repeated 10 times. 重复10 次循环。 4. after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20±5°C). 循环结束后, 所有试验电芯和电池在 20±5°C的条件下 搁置24 小时。		P
	Requirements / 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芯和电池。 3. No leakage, no venting, no disassembly, no rupture and no fire. 样品应无漏液、无排气、无解体、无破裂以及无着火现象的发生。	No leakage, no venting, no disassembly, no rupture and no fire. 无漏液、无排气、无解体、无破裂以及无着火现象。 The data see table 1. /测试数据见表1。	P

38.3.4.3	Test 3: Vibration / 测试 3: 振动		P
	<p>1. Cells and batteries are firmly secured to the platform of the vibration machine. 电芯和电池牢固地安装在振动台（的台面）上。</p> <p>2. The vibration :a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. 振动以正弦波形式，以7Hz 增加至200Hz，然后在减少回到7Hz 为一个循环，一个循环持续15 分钟的对数前移传送。</p> <p>3. the logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1 gn is maintained until 18 Hz is reached, The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 gn occurs (approximately 50Hz), A peak acceleration of 8 gn is then maintained until the frequency is increased to 200 Hz. 对数扫频为:从7 赫兹开始保持1gn 的最大加速度直到频率为18 赫兹，然后将振幅保持在0.8 毫米（总偏移1.6 毫米）并增加频率直到最大加速度达到8gn（频率约为50 赫兹），将最大加速度保持在8gn 直到频率增加到200 赫兹。</p> <p>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。</p>		P
	<p>Requirements / 标准要求:</p> <p>1. Cells and batteries Mass loss limit: $\leq 0.2\%$. 样品质量损失$\leq 0.2\%$.</p> <p>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芯和电池。</p> <p>3. No leakage, no venting, no disassembly, no rupture and no fire. 样品应无漏液、无排气、无解体、无破裂以及无着火现象的发生。</p>	<p>No leakage, no venting, no disassembly, no rupture and no fire. 无漏液、无排气、无解体、无破裂以及无着火现象。</p> <p>The data see table 1. /测试数据见表1。</p>	P
38.3.4.4	Test 4: Shock / 测试 4: 冲击		P

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	<p>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 test battery. Each cell or battery shall be subjected to a half-sine shock of peak acceleration of 150 gn and pulse duration of 6 milliseconds. Alternatively, large cells may be subjected to a half-sine shock of peak acceleration of 50 gn and pulse duration of 11 milliseconds.</p> <p>试验电芯和电池应通过坚固的方式紧固在试验设备上，可以支撑每个被测电池的所有面。每个电芯或电池应用峰值加速度150 gn、脉冲时间6 ms的半正弦波进行冲击。或者大电芯应用峰值加速度50 gn、脉冲时间11 ms的半正弦波进行冲击。</p>		P									
	<p>Each battery shall be subjected to a half-sine shock of peak acceleration depending on the mass of the battery. The pulse duration shall be 6 milliseconds for small batteries and 11 milliseconds for large batteries. The formulas below are provided to calculate the appropriate minimum peak accelerations.</p> <p>每个电池应用半正弦波冲击的峰值加速度大小取决于电池的质量。小电池应用6 ms的脉冲时间以及大电池应用11 ms的脉冲时间。根据下面的公式来计算合适的最小峰值加速度。</p> <table><tr><th>Battery</th><th>Minimum peak acceleration</th><th>Pulse duration</th></tr><tr><td>Small batteries</td><td>150 gn or result of formula Acceleration (gn) $= \sqrt{\left(\frac{100850}{mass *}\right)}$ Whichever is smaller</td><td>6ms</td></tr><tr><td>Large batteries</td><td>50 gn or result of formula Acceleration (gn) $= \sqrt{\left(\frac{30000}{mass *}\right)}$ Whichever is smaller</td><td>11ms</td></tr></table>	Battery	Minimum peak acceleration	Pulse duration	Small batteries	150 gn or result of formula Acceleration (gn) $= \sqrt{\left(\frac{100850}{mass *}\right)}$ Whichever is smaller	6ms	Large batteries	50 gn or result of formula Acceleration (gn) $= \sqrt{\left(\frac{30000}{mass *}\right)}$ Whichever is smaller	11ms		P
Battery	Minimum peak acceleration	Pulse duration										
Small batteries	150 gn or result of formula Acceleration (gn) $= \sqrt{\left(\frac{100850}{mass *}\right)}$ Whichever is smaller	6ms										
Large batteries	50 gn or result of formula Acceleration (gn) $= \sqrt{\left(\frac{30000}{mass *}\right)}$ Whichever is smaller	11ms										
	<p>Each cell or battery is subjected to three shocks in the positive direction and to three shocks in the negative direction in each of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks.</p> <p>每个电芯或电池应在三个垂直面的正向各承受三次冲击，负向再各承受3次冲击，共18次。</p>		P									

	<p>Requirements / 标准要求:</p> <p>1. Cells and batteries Mass loss limit: $\leq 0.2\%$. 样品质量损失$\leq 0.2\%$.</p> <p>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芯和电池。</p> <p>3. No leakage, no venting, no disassembly, no rupture and no fire. 样品应无漏液、无排气、无解体、无破裂以及无着火现象的发生。</p>	<p>No leakage, no venting, no disassembly, no rupture and no fire. 无漏液、无排气、无解体、无破裂以及无着火现象。</p> <p>The data see table 1. /测试数据见表1。</p>	P
38.3.4.5	Test 5: External Short Circuit / 测试5 外接短路		P
	<p>1. The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches $57\pm 4^{\circ}\text{C}$. 保持试验环境温度稳定在$57\pm 4^{\circ}\text{C}$，以使电芯或电池样品外表温度达到$57\pm 4^{\circ}\text{C}$。</p> <p>2. the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at $57\pm 4^{\circ}\text{C}$, This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to $57\pm 4^{\circ}\text{C}$. 将样品正负极用小于0.1Ω的总电阻回路进行短路，样品的外表温度恢复到$57\pm 4^{\circ}\text{C}$之后保持短路状态1 小时以上。</p> <p>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。</p>		P
	<p>Requirements / 标准要求:</p> <p>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。</p> <p>1. External temperature not exceed 170°C. 外表温度不超过170°C。</p> <p>2. No disassembly, no rupture and no fire. 样品应无解体、无破裂和无着火现象发生。</p>	<p>External temperature not exceed 170°C 外表温度不超过170°C</p> <p>No disassembly, no rupture and no fire. 无解体、无破裂和无着火现象发生。</p> <p>The data see table 1. /测试数据见表1。</p>	P
38.3.4.6	Test 6: Impact / Crush / 测试6: 撞击 / 挤压		P
	<p>Impact (applicable to cylindrical cells not less than 18mm in diameter). 撞击（适用于直径不小于18 毫米的圆柱形电芯）。</p>		N/A

	<p>1. This test sample cell or component cell is to be placed on a flat smooth surface. 将试验样品用的电芯或元件电芯放在一个平坦光滑的平面上。</p> <p>2. A 15.8mm±0.1mm diameter bar is to be placed across the center of the sample, A 9.1kg±0.1kg mass is to be dropped from a height of 61±2.5cm onto the sample. 将一直径为15.8mm±0.1mm的钢棒横过电池中部放置后，将一质量为9.1kg±0.1kg的物体从61±2.5cm 的高度落向样品。</p> <p>3. The test sample is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8mm±0.1mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact. 接受撞击的试样，纵轴应与平坦的表面平行并与横放在试样中心的直径15.8mm±0.1mm弯曲表面的纵轴垂直。每一个试样只经受一次撞击。</p>		N/A
	<p>Requirements / 标准要求:</p> <p>1. Test cells or component cells external temperature not exceed 170°C. 电芯或元件电芯的最高表面温度应不超过170°C。</p> <p>2. No disassembly and no fire within six hours of this test. 试验结束后6 个小时之内，应无解体和无着火现象发生。</p>		N/A
	<p>Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18mm in diameter). 挤压（适用于棱柱形、袋装、硬币/纽扣电芯和直径小于18 毫米的圆柱形电芯）。</p>		P

	<p>1. A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/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>将电芯或元件电芯放在两个平面之间挤压，挤压力度逐渐加大，在第一个接触点上的速度大约为1.5 厘米/秒。挤压持续进行，直到出现以下三种情况之一：</p> <p>(a) The applied force reaches 13 kN \pm 0.78 kN. 施加的力达到13 千牛\pm0.78 千牛。</p> <p>(b) The voltage of the cell drops by at least 100 mV. 电芯的电压下降至少100 毫伏。</p> <p>(c) The cell is deformed by 50% or more of its original thickness. 电芯变形达原始厚度的50%以上。</p> <p>2. A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis. 棱柱形或袋装电芯应从最宽的一面施压。纽扣/硬币形电池应从其平坦表面施压。圆柱形电芯应从与纵轴垂直的方向施压。</p>	<p>The applied force reaches 13 kN \pm 0.78 kN. 施加的力达到13 千牛\pm0.78 千牛。</p>	P
	<p>Requirements / 标准要求:</p> <p>1. Test cells or component cells external temperature not exceed 170°C. 电芯或元件电芯的最高表面温度应不超过170°C。</p> <p>2. No disassembly and no fire within six hours of this test. 试验结束后6 个小时之内，应无解体和无着火现象发生。</p>	<p>External temperature not exceed 170°C 外表温度不超过170°C</p> <p>No disassembly, no rupture and no fire. 无解体、无破裂和无着火现象发生。</p> <p>The data see table 2. /测试数据见表2。</p>	P
38.3.4.7	Test 7: Overcharge / 测试 7: 过充电		P

	<p>1. The charge current shall be twice the manufacturer's recommended maximum continuous charge current. 以2 倍制造厂推荐的最大持续充电电流对样品充电。</p> <p>2. The minimum voltage of the test shall be as follows: 本测试最小电压为:</p> <p>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。</p> <p>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。</p> <p>3. Tests are to be conducted at ambient temperature $20\pm5^{\circ}\text{C}$, The duration of the test shall be 24 hours. $20\pm5^{\circ}\text{C}$的环境温度下, 试验持续24 小时。</p>	<p>The voltage of the test is 8.4V, and the current is 2.4A. / 测试电压为 8.4V, 电流为2.4A.</p>	P
	<p>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。</p>	<p>No disassembly and no fire 无解体和无着火现象发生。 The data see table 2. /测试数据见表2。</p>	P
38.3.4.8	Test 8: Forced discharge / 测试 8: 强制放电		P
	<p>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. $20\pm5^{\circ}\text{C}$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, 此直流电源提供给每个电芯初始电流为制造厂指定的最大放电电流。</p>		P
	<p>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). 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负载来获得, 每个电芯的强制放电时间 (小时) 为额定容量除以初始电流 (安培)。</p>		P
	<p>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。</p>	<p>No disassembly and no fire. 无解体和无着火现象。 The data see table 2. /测试数据见表2。</p>	P

Table 1: T1-T5 / 表1. 试验1-试验5

Sample No. / 样品编号	Mass prior to test / 试验前质量(g)	OCV prior to test / 试验前电压(V)	Test 1: Altitude simulation 测试 1: 高度模拟		Test 2: Thermal test 测试 2: 温度实验		Test 3: Vibration 测试 3: 振动		Test 4: Shock 测试 4: 冲击		Test 5: External Short Circuit 测试 5: 外接短路
			Mass loss(%) 质量损失 (%)	Change ratio 电压比(%)	Mass loss(%) 质量损失 (%)	Change ratio 电压比(%)	Mass loss(%) 质量损失 (%)	Change ratio 电压比(%)	Mass loss(%) 质量损失 (%)	Change ratio 电压比(%)	Temp. (°C) 温度 (°C)
B1#	18.523	4.182	0.011	100.00	0.103	98.95	0.000	100.00	0.000	100.00	57.6
B2#	18.628	4.183	0.000	99.98	0.097	98.83	0.000	100.00	0.000	100.00	57.6
B3#	18.343	4.184	0.000	100.00	0.104	98.83	0.005	99.98	0.000	99.98	57.5
B4#	18.543	4.182	0.005	99.98	0.102	99.04	0.000	100.00	0.005	100.00	57.6
B5#	18.641	4.184	0.005	100.00	0.097	98.76	0.000	100.00	0.000	100.00	57.7
B6#	18.689	4.183	0.005	99.98	0.091	98.90	0.005	100.00	0.000	99.98	57.5
B7#	18.559	4.184	0.000	99.98	0.097	98.76	0.000	100.00	0.000	100.00	57.7
B8#	18.323	4.184	0.005	100.00	0.093	98.80	0.000	99.98	0.005	100.00	57.8
B9#	18.358	4.183	0.005	99.98	0.104	98.80	0.005	99.98	0.000	100.00	57.5
B10#	18.524	4.183	0.000	100.00	0.097	98.78	0.000	100.00	0.000	100.00	57.7

Table 2: T6-T8 / 表2. 试验6-试验8						
Test 6: Impact/ Crush / 测试6: 撞击/挤压			Test 7: Overcharge / 测试7:过充电		Test 8: Forced discharge / 测试8: 强制放电	
Sample No. / 样品编号	OCV prior to test / 试验前电压 (V)	Temp. (°C) / 温度 (°C)	Sample No. / 样品编号	OCV prior to test / 试验前电压 (V)	Sample No. / 样品编号	OCV prior to test / 试验前电压 (V)
C1#	3.786	23.2	B11#	4.183	C11#	3.345
C2#	3.789	23.2	B12#	4.184	C12#	3.362
C3#	3.792	23.3	B13#	4.182	C13#	3.358
C4#	3.794	23.1	B14#	4.182	C14#	3.344
C5#	3.786	23.1	B15#	4.183	C15#	3.339
C6#	3.788	23.1	B16#	4.183	C16#	3.372
C7#	3.792	23.2	B17#	4.182	C17#	3.364
C8#	3.777	23.2	B18#	4.182	C18#	3.351
C9#	3.794	23.0	--	--	C19#	3.346
C10#	3.789	23.1	--	--	C20#	3.343
--	--	--	--	--	C21#	3.339
--	--	--	--	--	C22#	3.351
--	--	--	--	--	C23#	3.358
--	--	--	--	--	C24#	3.346
--	--	--	--	--	C25#	3.344
--	--	--	--	--	C26#	3.339
--	--	--	--	--	C27#	3.358
--	--	--	--	--	C28#	3.372
--	--	--	--	--	C29#	3.366
--	--	--	--	--	C30#	3.365

--- 报告结束 ---

--- End of report ---

声明 Declaration

1. 本报告无批准人、审核人及鉴定人签名无效。

The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.

2. 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 ESTL within 15 days.

3. 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 ESTL.

4. 客户必须如实提供样品及资料，并保证申报品名和样品以及运输货物相同，否则本检测单位不承担 任何相关责任。

The client should provide samples and relevant data, at the same time, they should guarantee the consistence of the product's name the declared, the samples they provided and the goods to be transported. Otherwise we will not bear any relevant responsibilities.

5. 本报告仅对送检样品负责。

The test report is valid for the tested samples only.

6. 任何情况下检测单位的赔偿责任都不会超过检测单位就本次检测所收取的检测费用。

ESTL's liability under no circumstance will exceed the testing fee received from applicant for test conducted hereof this testing report.

7. 本报告涂改无效。

The test report is invalid if altered.