

### MD600121 M50 Battery MSDS and Safety Report, APP00315

#### **REVISION HISTORY**

Rev	Description	Originator Date	
Α	Initial release per CO-21-0231.	Bill Yu	01/25/2021
В	Update per CO-22-1105: Added 1.2m drop test report to MD600121.	Bill Yu	06/29/2022
С	Update per CO-22-1207: Revised document name and updated content structure.	Bill Yu	07/20/2022

DOC #:
MD600121
Print Date: 20 Jul 20

### **Contents**

- 1. Material Safety Datasheet for rechargeable Li-ion battery APP00315 3.8V 4000mAh 15.2Wh
- 2. UN38.3 test summary for rechargeable Li-ion battery APP00315 3.8V 4000mAh 15.2Wh
- 3. UN38.3 test report for rechargeable Li-ion battery APP00315 3.8V 4000mAh 15.2Wh
- 4. 1.2m drop test report for rechargeable Li-ion battery APP00315 3.8V 4000mAh 15.2Wh

DOC #:	
MD60	0121
Print Date:	20-Jul-22





### Material Safety Data Sheet

### Section 1 Chemical Product and Company Identification

Product information battery Model: APP00315	
Lithium-Ion Rechargeable cell Model: Li-Fun 625771	
Nominal Voltage: 3.8V	
Watt-hour Rating: 15.2Wh	
Manufacturer: APACK.TECHNOLOGY CO., LTD.	
Address: 6F, No. 653-2, Jhongjheng Rd., Sinjhuang Dist, New Taipei City 242, Tai	iwan
Telephone: +886-2-2903-1303	

Section 2 Composition/Information on Ingredients

INGREDIENTS	Weight Percentage/%(about)	CAS No.
Cobaltic lithium oxide钴酸锂	35.05%	12190-79-3
Graphite powder石墨	15.98%	7782-42-5
Garbon black导电炭黑	0.79%	1333-86-4
Hexafluoropropylene-vinylidene fluoride copolymer氟共聚物	9.87%	9011-17-0
Dimethyl carbonate碳酸二甲酯	4.38%	616-38-6
Ethyl methyl carbonate碳酸甲乙酯	2.29%	623-53-0
Lithium hexafluorophosphate六氟磷酸锂	2.95%	21324-40-3
Ethylene carbonate(EC)碳酸乙烯酯	6.34%	96-49-1
Diethyl carbonate(DEC)二甲基碳酸酯	2.76%	105-58-8
Propylene carbonate(PC)丙烯碳酸酯	1.11%	108-32-7
Copper 铜	8.39%	7440-50-8
Styrene-butadiene rubber(SBR)丁苯橡胶	0.71%	61789-96-6
Aluminium 铝	7.13	

### Section 3 Hazards Identification

The lithium ion batteries are not hazardous used according to the instructions of manufacturer under normal conditions. In case of abuse, there's a risk of explode, rupture, fire, heat, leakage of internal components, which could cause casualty loss. Abuses include but not limited to the following cases: charge for a long time, short circuit, put into fire, whack with hard object, puncture with acute object, crush, break.

File No./Rev.:MSDS

Date: 2021 / 1/1

DOC #:	
MD60	0121
Print Date:	20-Jul-22

REV: C

Page 3 of 25



#### Section 4 First-aid Measures

The lithium batteries are not hazardous with eye and skin contact under normal circumstance. In case of fire or rupture, the leakage of internal hazardous substance and formation of hazardous substance would occur, take the following measures if contact with it:

Eye: Check for and remove any contact lenses. Immediately flush with plenty of clean water for atlest 15 minutes, seek medical assistance;

Skin: Immediately flush with plenty of clean water for 15 minutes; seek medical assistance if severe;

Inhalation: If inhaled, remove to fresh air immediately, seek medical assistance, and ventilate the contaminated area.

**Ingestion**: Rinse mouth with clean water immediately, activate vomit under the direction of expert, and seek medical assistance.

#### Section 5 Fire-fighting Measures

Extinguish with plenty of water, dry powder extinguishers, sands, earth. Combustion products and decomposed products by contact of water or air with internal substance include: carbon monoxide, carbon dioxide, hydrogen fluoride, phosphorus fluoride.

#### Section 6 Accidental Release Measures

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

#### Section 7 Handling and Storage

Don't handle and store batteries with metalwork. Store and use far away from heat, sparks, open flame, or any other ignition source, and under room temperature (<30°C) in ventilating and dehumidifying environments.

#### Section 8 Exposure Controls/Personal Protection

There is no need for protect under normal conditions. Inengineering aspect, ventilation equipment should be installed. Gas mask, blinkers, gloves enduring chemical erosion an exposure suit are required when dealing with fire and leakage.

File No./Rev.:MSDS Date:2021 / 1/1

DOC #:
MD600121
Print Date: 20-Jul-22

REV: C

Page 4 of 25



#### Section 9 Physical and Chemical Properties

Batteries are not single chemical material; there are no specific physical and chemical properties such as melting point and boiling point. Main purpose of lithium batteries: used in portable and digital products.

#### Section 10 Stability and Reactivity

Batteries are safe under normal conditions. The following substance might appear after catching fire or leakage: organic carbonate, hydrogen fluoride, carbon monoxide, carbon dioxide, phosphorus fluoride.

#### Section 11 Toxicological Information

Batteries are not hazardous when used properly. If the batteries catch fire or the internal substance leaks, combustion products and decomposed products might have irritation and toxicity to skin, eye and respiratory systems. Toxicity data of some substance are listed following:

Hydrogen fluoride:

Extremely toxic. May be fatal if inhaled or ingested. Readily absorbed through the skin contact may be fatal. Possible mutagen.LCLo: 50 ppm/30m (human beings) , LC50: 1276 ppm/1h (rats) ° Carbon and graphite:

Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation. Causes chronic damage to upper respiratory tract and cardiovascular system.

Copper: Dust may cause respiratory irritation.LD50: 3.5 mg kg<sup>-1</sup>(mouse). Aluminium: There is no hazard.

#### Section 12 Ecological Information

There is no influence to ecology and environment when used properly.

#### Section 13 Disposal

Deserted batteries couldn't be treated as ordinary trash. Be put to garbage box which recycle batteries after being placed into plastic bags or bedealt as special trash. Couldn't be thrown into fire or placed in high temperature. Couldn't be dissected, pierced, crushed or treated similarly. The package and plastic box which contain batteries could be treated as ordinary trash. Best way is

File No./Rev.:MSDS Date:2021 / 1/ 1

DOC #: MD600121 Print Date: 20-Jul-22

REV: C

Page 5 of 25

APack

recycling.

#### **Section 14 Transport Information**

For the international transport of lithium batteries, they must comply with these regulations: the International Maritime Dangerous Goods (IMDG) Code by International Maritime Organization (IMO), Dangerous Goods Regulations (DGR) by International Air Transport Association (IATA) and Technical Instructions for the Safe Transport of Dangerous Goods by Air (TI) by International Civil Aviation Organization (ICAO). These regulations are based on the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria.

Lithium batteries which meet the requirements of UN38.3 (UN Manual of Tests and Criteria, Part III, subsection 38.3) could be transported by air and by sea as ordinary goods, otherwise should be transported according to Class 9, Packing Group 1 hazardous goods.

According to UN classification: However this product's shipping name is "lithium ion batteries" (or "Lithium ion Batteries packed with equipment" or "Lithium ion Batteries contained in equipment"), it is not recognized as "DANGEROUS GOODS" when its transport condition accords with "packing instruction 965 section IB of IATA-DGR" (or "Packing instruction 966 section II" or "Packing instruction 967 section II") or "special provision 188 of IMO-IMDG Code".

- For lithium ion batteries, UN ID number is 3480. For lithium ion batteries contained in equipment or lithium ion batteries packed with equipment, UN ID number is 3481.
- 2. The consignment should be fully described by proper shipping name and packed, marked and in proper condition for carriage by air. The consignment is not classified as dangerous under the current edition of the 62nd edition of IATA DGR "Dangerous Goods Regulations" in 2021, Dangerous goods regulation and all applicable carrier and government regulations.
- 3. For transported by air, Lithium-ion Cells/Batteries shipped as "Not Restricted" Cargo: Must comply with section IB of PI965 or section II of PI967 accordingly; For cells, the Watt-hour rating should not be more than 20Wh; For batteries, the Watt-hour rating should not be more than 100Wh. Watt-hour rating must be marked on the outside of the battery case (marked by manufacturer),

File No./Rev.:MSDS Date:2021 / 1/1

DOC #: MD600121 Print Date: 20-Jul-22

REV: C

Page 6 of 25

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- 4. Each consignment must be accompanied with a document such as an air waybill with anindication. For those Lithium ion cells/ batteries contained in equipment, the equipment must be equipped with an effective means of preventing accidental activation. The telephone number for additional information for Apack Battery is +886-2-2903-1303.
- 5. Quantity per package shall not exceed 10 kg.
- Each package must be capable of withstanding a 1.2m drop test in any orientation without damage of cells or batteries contained therein.
- 7. Lithium batteries which meet the requirements of A154 could be transported by air, and the batteries manufactured by Apack meet these requirements. (A154 Lithium batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, thathave the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport.)
- Cells and batteries must be protected so as to prevent short circuits. This includes protection
  against contact with conductive materials within the same packaging that could lead to short
  circuit.
- 9. Transport condition should accord with "special provision 188 of IMO-IMDG Code".

#### **Section 15 Regulatory Information**

OSHA hazard communication standard (29 CFR 1910.1200)

\_\_\_\_\_hazardous\_\_\_√\_\_Non-hazardous

#### Section 16 Other Information

This information is not effective to all the batteries manufactured by Apack. This information comes from reliable sources, but no warranty is made to the completeness and accuracy of information contained. Apack doesn't assume responsibility for any damage or loss because of misuse of batteries. Users should grasp the correct use method and be responsible for the use of batteries.

Prepared:



Audited:

File No./Rev.:MSDS

Date: 2021 / 1/1

DOC #: MD600121 Print Date: 20-Jul-22

REV: C

Page 7 of 25



## UN38.3 试验概要 UN38.3 Test Summary



•		t Summary	812000300453838	
	单位信息 Com	pany information		
委托单位 Consignor	典暉科技股份有限公司 APack 台灣新北市新莊區中正路 649 New Taipei City 242, Taiwan	Technology Co., Ltd. -2 號 3 樓 3F, No. 649-2,	Jhongjheng Rd., Sinjhuang Dist,	
	886229031303 ce@	papack.com.tw	http://www.apack.com.t	
生产单位 Manufacturer	Road,QingXi Town,Dongguan City,Guangdong Province P.R.China 0769-82092529 panxh@funpack.com.cn http://w			
测试单位 Test lab	Co., Ltd. 中国.上海.普陀区云岭东路 345 China 200062		.cn/ te of Chemical Industry Testing Yunling Road, Putuo, Shanghai, www.ghs.cn	
		ery information	www.gns.cn	
名称	二次锂电池 Rechargeable	品牌		
Name	Li-ion Battery	Brand	1	
型号 Type	E864455	原始测试型号 Original tested type	/	
标称电压(V) Nominal voltage	3.8	容量/能量 Capacity/energy	4000mAh 15.2Wh	
描述 Description	可充电锂离子单电芯电池 Rechargeable Li-ion single cell battery	锂含量(g) Li content	,	
质量(kg) Mass	质量(kg) 外观 Mass 0.0780 外观 Appearance		黑色塑胶外壳 black plastics cement shell	
	测试信息 Tes	t information		
原报告编号 Original test report No.	1120050351	测试报告日期 Date of test report	2020-07-01	
测试标准 Test standard	联合国《关于危险货物运输的 册》第 38.3 章 UNITED NATION the TRANSPORT OF DANGERO of Tests and Criteria 38.3	建议书 试验和标准手 S."Recommendations on	ST/SG/AC.10/11/Rev.6/Ame nd.1	
T.1 高度模拟 Altitude simulation	合格 Passed	T.2 温度测试 Thermal test	合格 Passed	
T.3 振动测试 Vibration	合格 Passed	T.4 冲击测试 Shock	合格 Passed	
T.5 外部短路 External short circuit T.7 过度充电	合格 Passed	T.6 挤压 Crush	合格 Passed	
1./ 过度允电 Overcharge	合格 Passed	T.8 强制放电 Forced discharge	合格 Passed	
38.3.3 (f)	/	38.3.3 (g)	1	

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1/2



DOC #: MD600121 Print Date: 20-Jul-22

REV: C

Page 8 of 25



-验证码:158907-

\*\*\*报告结束\*\*\*

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www.ghs.cn

2/2

DOC #:	
MD60	0121
Print Date:	20lul-22

REV: C

Page 9 of 25







NO.1120050351

## 测 报

## Test Report

样品名称:

二次锂电池 E864455 3.8V 4000mAh 15.2Wh

Name of Sample:

Rechargeable Li-ion Battery E864455 3.8V 4000mAh

15.2Wh

委托单位:

典暉科技股份有限公司

Consignor:

Industry Testing Co., Ltd. Shanghai Research Institute

### 上海化工院检测有限公司 检测报告

Shanghai Research Institute of Chemical Industry Testing Co., Ltd. Test Report

NO. 1120050351

1/11

		1/11	
样品名称	中文 Chinese	二次锂屯池 E864455 3.8V 4000mAh 15.2Wh	
Name of Sample	英文 English	Rechargeable Li-ion Battery E864455 3.8V 4000mAh 15.2Wh	
样品编号 Sample No.		1120050351	
委托单位 Consignor		典暉科技股份有限公司 /	
生产单位 Manufacturer		東莞市豐暉電子有限公司 Dongguan Funpack elec Co., LTD.	
检测方法 Test method	ST/SG/AC. 10, OF DANGER	联合国《关于危险货物运输的建议书 试验和标准手册》 /11/Rev.6 Amend.1 38.3 UNITED NATIONS "Recommendations on the TRANSPORT ROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6 Amend.1 Section 38.3	
判定标准 Criterion	联合国《关于危险货物运输的建议书 试验和标准手册》 ST/SG/AC.10/11/Rev.6 Amend.1 38.3 UNITED NATIONS "Recommendations on the TRANSPO OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6 Amend.1 Section 38.3 黑色塑胶外壳 Black Plastics cement shell		
样品外观 Appearance			
样品接受日期 Accepted Date     2020-05-21     检测起迄日期 Test Date     2020-06-02~       高度模拟:热测试:振动:冲击:外短路:挤压:过充电;强制范		0-05-21	
		高度模拟;热测试;振动;冲击;外短路;挤压;过充电;强制放电 ltitude simulation, Thermal test, Vibration, Shock, External short circuit, Crush, Overcharge, Forced discharge	
检测结论 Conclusion	ST/SG/AC. 10	学品符合联合国《关于危险货物运输的建议书 试验和标准手册》 D/11/Rev.6 Amend.1 38.3标准要求。 has passed the test items of UNITED NATIONS "Recommendations on the DF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC 10/11/Rev.6 3 生效日期(Date): 2020-07-01	
备注 Comment  可充电单电芯电池Rechargeable Single Cell Battery./ (28)		一一一	
委托单位地址 Consignor Address		邮政编码 / Post Code	

批准 Approver: 16-1.W

审核 Checker:

编制 Compiler: 頂位

职务 Title:

副总工程师(Vice chief engineer)



DOC #: MD600121 Print Date: 20-Jul-22

REV: C

Page 11 of 25

## 上海化工院检测有限公司 检 测 报 告

Shanghai Research Institute of Chemical Industry Testing Co., Ltd. Test Report

NO. 1120050351

2/11

序号 No.	检测项目名称 Name of Test	标准要求或标 Standard requiren Clause Number o	nent or The of Standard	检测结果 Test Result	本项结论 Conclusion	各注 Remark
1	高度模拟 Altitude simulation	联合国《关于危险货物运输 准乎册》ST/SG/AC.10/11/ 试验T.1 UN Manual of Tests and ST/SG/AC.10/11/Rev.6	Criteria Amend.1 Section	See Appendix 1	合格 Passed	/
2	热测试 Thermal test	38.3 Test T.1 联合国《关于危险货物运 准手册》ST/SG/AC.10/11, 试验T.2 UN Manual of Tests and ST/SG/AC.10/11/Rev.6	Criteria Amend. 1 Section	See Appendix 2	合格 Passed	1
3	振动 Vibration	38.3 Test T.2 联合国《关于危险货物运准于册》ST/SG/AC.10/11 试验T.3 UN Manual of Tests and ST/SG/AC.10/11/Rev.6	/Rev. 6 Amend. 1 3	见附表 3 See Appendix 3	合格 Passed	/
4	冲击 Shock	38.3 Test T.3 联合国《关于危险货物运 准于册》ST/SG/AC.10/11 试验T.4 UN Manual of Tests and ST/SG/AC.10/11/Rev.6	d Criteria	见附表 4 See Appendix 4	合格 Passed	1
5	外短路 External short circuit	38.3 Test T.4 联合国《关于危险货物运 准手册》ST/SG/AC.10/1 试验T.5 UN Manual of Tests an ST/SG/AC.10/11/Rev.6	d Criteria Amend. 1 Section	See Appendix 5	合格 Passed	1
6	挤压 Crush	38.3 Test T.5 联合国《关于危险货物) 推手册》ST/SG/AC.10/1 试验T.6 UN Manual of Tests at ST/SG/AC.10/11/Rev.6	nd Criteria Amend. 1 Section	See Appendix 6	合格 Passed	/
7	过充电 Overcharge	联合国《关于危险货物 准于册》ST/SG/AC.10/ 试验T.7 UN Manual of Tests a ST/SG/AC.10/11/Rev.6	UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6 Amend.1 Section		7 合格 Passed	1
8	强制放电 Forced dischar	ST/SG/AC. 10/11/Rev. 6	And Criteria Amend.1 Section	See Appendix	Passed	/
	检测环境条件 Test Environment Condition		环境温 ient temperat	<b>痩:22℃−24℃;</b> 环境海ure:22℃−24℃;Ambi	起度:/% ent humidity:/	%
		检测项目 Test Item		/		
S	分包检验情况 ubcontracted Test	分包实验室	名称	/	邮编 Post Code	1
	Condition	Subcontracted Laboratory	Name 地址 Address	/	电话 Tel	1

DOC #:
MD600121
Print Date: 20-Jul-22

## 上海化工院检测有限公司 检 测 报 告 - 附表 1

SRICI Testing Co., Ltd. Test Report—Appendix

NO. 1120050351

3/11

序号 No.	1	0.0000000000000000000000000000000000000	百名称 Test Items	高度模拟 Altitude	simulation			
样品 编号 Sample No.	样品状态 Sample Status	试验前 质量 Mass	Before 开路电压 OCV /V	试验 质量 Mass	后 After 开路电压 OCV /V	质量损失 Mass Loss /%	剩余电压 Residual OCV /%	其他 现象 Other Event
001	1CYC完全充电 1CYC Fully charged	77. 9003	4. 31	77. 8994	4. 31	0.00	100.00	О
002	1CYC完全充电 1CYC Fully charged	77.8327	4. 31	77. 8323	4.31	0.00	100.00	0
003	1CYC完全充电 1CYC Fully charged	77. 9604	4. 31	77. 9594	4. 31	0.00	100.00	0
004	1CYC完全充电 1CYC Fully charged	77. 8794	4. 31	77. 8785	4. 31	0.00	100.00	0
005	ICYC完全充电 ICYC Fully charged	77. 6711	4. 32	77.6704	4. 31	0.00	99. 77	0
006	25CYC完全充电 25CYC Fully charged	77. 5745	4. 31	77. 5737	4.31	0.00	100.00	0
007	25CYC完全充电 25CYC Fully charged	78, 0013	4. 31	78. 0004	4.31	0.00	100.00	0
008	25CYC完全充电 25CYC Fully charged	77. 7348	4. 31	77. 7340	4. 31	0.00	100.00	0
009	25CYC完全充电 25CYC Fully charged	77. 4559	4. 31	77. 4552	4. 31	0.00	100.00	0
010	25CYC完全充电 25CYC Fully charged	77. 5946	4. 31	77. 5942	4. 31	0.00	100.00	0
<b>以下空</b> 户	This space intentionally left blank							
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备注: L-泄漏 V-漏气 D-解体 R-破裂 F-起火 0-无泄漏、无漏气、无解体、无破裂、无起火。 Note: L-Leakage V-Venting D-Disassembly R-Rupture F-Fire O-No Leakage,No Venting, No Disassembly,No Rupture & No Fire.

DOC #:
MD600121
Print Date: 20-Jul-22

2

## 上海化工院检测有限公司 检 测 报 告-附表 2

SRICI Testing Co., Ltd. Test Report—Appendix

NO. 1120050351

4/11

序号 No.	2		目名称 Test Items	热测试 Thermal t	test			
样品	样品状态		Before		后 After	质量损失	剩余电压	
编号 Sample No.	Sample Status	质量 Mass /g	开路电压 OCV /V	质量 Mass /g	开路电压 OCV /V	Mass Loss	Residual OCV /%	现象 Other Event
001	1CYC完全充电 1CYC Fully charged	77. 8994	4. 31	77. 9008	4. 22	0.00	97. 91	О
002	ICYC完全充电 ICYC Fully charged	77. 8323	4. 31	77. 8342	4. 24	0.00	98. 38	0
003	1CYC完全充电 1CYC Fully charged	77. 9594	4. 31	77. 9607	4. 24	0.00	98. 38	О
004	1CYC完全充电 1CYC Fully charged	77. 8785	4. 31	77. 8794	4. 24	0.00	98. 38	0
005	1CYC完全充电 1CYC Fully charged	77.6704	4. 31	77. 6721	4. 21	0.00	97. 68	O
006	25CYC完全充电 25CYC Fully charged	77. 5737	4. 31	77. 5752	4. 25	0.00	98.61	О
007	25CYC完全充电 25CYC Fully charged	78, 0004	4. 31	78. 0018	4. 24	0.00	98. 38	0
008	25CYC完全充电 25CYC Fully charged	77. 7340	4. 31	77. 7351	4. 22	0.00	97. 91	0
009	25CYC完全充电 25CYC Fully charged	77. 4552	4. 31	77. 4572	4. 24	0.00	98. 38	0
010	25CYC完全充电 25CYC Fully charged	77. 5942	4. 31	77. 5944	4. 24	0.00	98. 38	0
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备注: L-泄漏 V-漏气 D-解体 R-破裂 F-起火 0-无泄漏、无漏气、无解体、无破裂、无起火。 Note: L-Leakage V-Venting D-Disassembly R-Rupture F-Fire O-No Leakage,No Venting, No Disassembly,No Rupture & No Fire.

DOC #:
MD600121
Print Date: 20-Jul-22

3

### 上海化工院检测有限公司 检 测 报 告-附表 3

SRICI Testing Co., Ltd. Test Report—Appendix

NO. 1120050351

5/11

序号 No.	3	ANTECONO SECTION	<b>百名称</b> Test Items	振动 Vibration	n	_		
样品	样品状态	试验前	Before		后 After	质量损失	剩余电压	其他
编号 Sample No.	Sample Status	质量 Mass /g	开路电压 OCV /V	质量 Mass /g	开路电压 OCV /V	Mass Loss	Residual OCV /%	现象 Other Even
001	1CYC完全充电 1CYC Fully charged	77. 9008	4. 22	77. 9029	4. 23	0.00	100.00	О
002	1CYC完全充电 1CYC Fully charged	77. 8342	4. 24	77. 8367	4. 24	0.00	100.00	O
003	1CYC完全充电 1CYC Fully charged	77. 9607	4. 24	77. 9633	4. 24	0.00	100.00	О
004	1CYC完全充电 1CYC Fully charged	77. 8794	4. 24	77. 8818	4. 24	0.00	100.00	О
005	1CYC完全充电 1CYC Fully charged	77. 6721	4. 21	77. 6745	4. 24	0.00	100.00	О
006	25CYC完全充电 25CYC Fully charged	77. 5752	4. 25	77. 5779	4. 24	0.00	99. 76	О
007	25CYC完全充电 25CYC Fully charged	78. 0018	4. 24	78. 0046	4. 24	0.00	100.00	0
008	25CYC完全充电 25CYC Fully charged	77. 7351	4. 22	77. 7374	4. 24	0.00	100.00	0
009	25CYC完全充电 25CYC Fully charged	77. 4572	4, 24	77. 4592	4. 23	0.00	99. 76	0
010	25CYC完全充电 25CYC Fully charged	77. 5944	4. 24	77. 5973	4. 24	0.00	100.00	0
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备注: L-泄漏 V-漏气 D-解体 R-破裂 F-起火 0-无泄漏、无漏气、无解体、无破裂、无起火。 Note: L-Leakage V-Venting D-Disassembly R-Rupture F-Fire O-No Leakage,No Venting, No Disassembly,No Rupture & No Fire.

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Print Date:	20-Jul-22

## 上海化工院检测有限公司 检 测 报 告-附表 <sup>4</sup>

SRICI Testing Co., Ltd. Test Report—Appendix

4 No. 1120050351

6/11

序号 No.	4	检测项 Name of		冲击 Shock				
		试验前	Before	试验后	After	质量损失	剩余电压	其他
样品 编号 ample No.	样品状态 Sample Status	质量 Mass /g	开路电压 OCV /V	质量 Mass /g	开路电压 OCV /V	Mass Loss	Residual OCV /%	现象 Other Event
001	1CYC完全充电 1CYC Fully charged	77. 9029	4. 23	77. 9002	4. 23	0.00	100.00	0
002	1CYC完全充电 1CYC Fully charged	77. 8367	4. 24	77. 8344	4, 23	0.00	99. 76	0
003	1CYC完全充电 1CYC Fully charged	77. 9633	4. 24	77.9600	4. 23	0.00	99. 76	0
004	1CYC完全充电 1CYC Fully charged	77. 8818	4. 24	77. 8787	4. 23	0.00	99. 76	0
005	1CYC完全充电 1CYC Fully charged	77. 6745	4. 24	77. 6715	4. 23	0.00	99. 76	0
006	25CYC完全充电 25CYC Fully charged	77. 5779	4. 24	77. 5746	4, 23	0.00	99. 76	0
007	25CYC完全充电 25CYC Fully charged	78. 0046	4. 24	78. 0022	4. 23	0.00	99. 76	0
008	25CYC完全充电 25CYC Fully charged	77. 7374	4. 24	77. 7346	4. 23	0.00	99. 76	0
009	25CYC完全充电 25CYC Fully charged	77. 4592	4. 23	77. 4564	4. 23	0, 00	100.00	0
010	25CYC完全充电 25CYC Fully charged	77. 5973	4. 24	77. 5948	4. 23	0.00	99. 76	0
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备注: L-泄漏 V-漏气 D-解体 R-破裂 F-起火 0-无泄漏、无漏气、无解体、无破裂、无起火。Note: L-Leakage V-Venting D-Disassembly R-Rupture F-Fire O-No Leakage,No Venting,No Disassembly,No Rupture & No Fire.

DOC #: MD600121 Print Date: 20-Jul-22

REV: C Page 16 of 25

## 上海化工院检测有限公司 检 测 报 告-附表 5

SRICI Testing Co., Ltd. Test Report - Appendix

NO. 1120050351

7/11

序号 No.	5	检测项目名称 Name of Test Items	外短路 External short circuit
样品编号 Sample No.	样品状态 Sample Status	样品表面最高温度 Max. External Temperature /℃	其他现象 Other Event
001	1CYC完全充电 1CYC Fully charged	58. 1	O
002	1CYC完全充电 1CYC Fully charged	58. 5	O
003	1CYC完全充电 1CYC Fully charged	58. 9	0
004	1CYC完全充电 1CYC Fully charged	59. 4	0
005	1CYC完全充电 1CYC Fully charged	59, 6	0
006	25CYC完全充电 25CYC Fully charged	58. 3	0
007	25CYC完全充电 25CYC Fully charged	58. 2	0
008	25CYC完全充电 25CYC Fully charged	58. 6	O
009	25CYC完全充电 25CYC Fully charged	58. 5	O
010	25CYC完全充电 25CYC Fully charged	58, 6	0
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			- ar *
		· ·	

备注: D-解体 R-破裂 F-起火 O-无解体、无起火、无破裂。

Note: D-Disassembly R-Ruptur F-Fire O-No Disassembly, No Fire & No Rupture.

## 上海化工院检测有限公司 检 测 报 告-附表 6

SRICI Testing Co., Ltd. Test Report—Appendix

NO. 1120050351

8/11

序号 No.	6	检测项目名称 Name of Test Items	挤压 Crush
样品编号 Sample No.	样品状态 Sample Status	样品表面最高温度 Max. External Temperature /℃	其他现象 Other Event
011	1CYC 50%容量 1CYC 50% Capacity	23. 5	О
012	1CYC 50%容量 1CYC 50% Capacity	23. 6	0
013	1CYC 50%容量 1CYC 50% Capacity	23. 2	O
014	1CYC 50%容量 1CYC 50% Capacity	23. 7	0
015	1CYC 50%容量 1CYC 50% Capacity	23. 6	0
016	25CYC 50%容量 25CYC 50% Capacity	23.8	0
017	25CYC 50%容量 25CYC 50% Capacity	23. 4	О
018	25CYC 50%容量 25CYC 50% Capacity	23. 4	0
019	25CYC 50%容量 25CYC 50% Capacity	23. 4	0
020	25CYC 50%容量 25CYC 50% Capacity	23. 4	0
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备注: D-解体 F-起火 O-无解体、无起火。

Note: D-Disassembly F-Fire O-No Disassembly & No Fire.

## 上海化工院检测有限公司 检 测 报 告-附表 7

SRICI Testing Co., Ltd. Test Report—Appendix 7

NO. 1120050351

9/11

序号	7	检测项目名称 Name of Test Items	过充电 Overcharge	
No. 样品编号	样品状态		其他现象	
Sample No.	Sample Status	Other Event		
021	1CYC完全充电 1CYC Fully charged		О	
022	1CYC完全充电 1CYC Fully charged		0	
023	1CYC完全充电 1CYC Fully charged		0	
024	1CYC完全充电 1CYC Fully charged		0	
025	25CYC完全充电 25CYC Fully charged		0	
026	25CYC完全充电 25CYC Fully charged		0	
027	25CYC完全充电 25CYC Fully charged		0	
028	25CYC完全充电 25CYC Fully charged		0	
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		DKI		
-				
			- 90 "	
		1.	ž-	

备注: D-解体 F-起火 O-无解体、无起火。

Note: D-Disassembly F-Fire O-No Disassembly & No Fire.

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Print Date:	20-Jul-22

## 上海化工院检测有限公司 检 测 报 告-附表 8

SRICI Testing Co., Ltd. Test Report—Appendix

8 No. 1120050351

10/11

序号 No.	8	检测项目名称 Name of Test Items	强制放电 Forced discharge	
样品编号 Sample No.	样品状态 Sample Status	其他现象 Other Event		
029	ICYC完全放电 ICYC Fully discharged		0	
030	1CYC完全放电 1CYC Fully discharged		0	
031	1CYC完全放电 1CYC Fully discharged		0	
032	1CYC完全放电 1CYC Fully discharged		0	
033	1CYC完全放电 1CYC Fully discharged		O	
034	1CYC完全放电 1CYC Fully discharged		O	
035	ICYC完全放电 ICYC Fully discharged		0	
036	1CYC完全放电 1CYC Fully discharged	0		
037	ICYC完全放电 ICYC Fully discharged	0		
038	1CYC完全放电 1CYC Fully discharged		0	
039	25CYC完全放电 25CYC Fully discharged	A CONTRACTOR OF THE CONTRACTOR	О	
040	25CYC完全放电 25CYC Fully discharged		О	
041	25CYC完全放电 25CYC Fully discharged		О	
042	25CYC完全放电 25CYC Fully discharged		О	
043	25CYC完全放电 25CYC Fully discharged		О	
044	25CYC完全放电 25CYC Fully discharged		0	
045	25CYC完全放电 25CYC Fully discharged	. 0		
046	25CYC完全放电 25CYC Fully discharged	. 0		
047	25CYC完全放电 25CYC Fully discharged	O		
048	25CYC完全放电 25CYC Fully discharged	0		

备注: D-解体 F-起火 O-无解体、无起火。

Note: D-Disassembly F-Fire O-No Disassembly & No Fire.

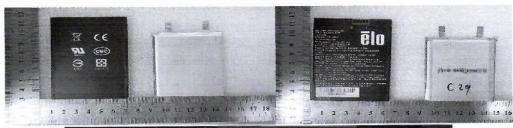
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Print Date: 20-Jul-22

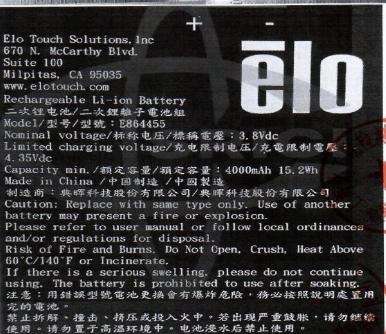
## 上海化工院检测有限公司 检 测 报 告 - 附图

SRICI Testing Co., Ltd. Test Report—Appendix

NO. 1120050351

11/11





\*\*\*报告结束\*\*\*

E203000928

11CP62/57/71







NO.1120070215

## 检测报告

## Test Report

样品名称:

二次锂电池 E864455 3.8V 4000mAh 15.2Wh

Name of Sample:

Rechargeable Li-ion Battery E864455 3.8V 4000mAh

15. 2Wh

委托单位:

典暉科技股份有限公司

Consignor:

APACK TECHNOLOGY CO., LTD

上海化工院检测存限公司

Shanghai Research Institute of Chemical Industry Testing Co., Ltd.

### 上海化工院检测有限公司 检测报告

Shanghai Research Institute of Chemical Industry Testing Co., Ltd. Test Report

NO. 1120070215

样品名称	中文 Chinese							
Name of Sample	英文 Rechargeable Li-ion Battery E864455 3.8V 4000mAh 15.2Wh English							
样品编号 Sample No.	1120070215							
委托单位 Consignor	典暉科技股份有限公司 APACK TECHNOLOGY CO., LTD							
生产单位 Manufacturer	典暺科技股份有限公司 APACK TECHNOLOGY CO., LTD							
检测方法 Test method	联合国《关于危险货物运输的建议书 规章范本》(20th)特殊规定188条款。 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Model Regulations(20th) special provisions 188							
判定标准 Criterion	联合国《关于危险货物运输的建议书 规章范本》(20th)特殊规定188条款。 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Model Regulations(20th) special provisions 188							
样品外观 Appearance	Rectangle	长方形瓦林 corrugated ca	男纸箱 (295mm×25 rton (295mm×25	5mm×255mm)	),内装104个锂电池 containing 104 l	也。 ithium batteri		
样品接受日期 Accepted Date	2020 07 10					2020-08-12		
检测项目 Test Items				n跌落试验 Drop test				
检测结论 Conclusion	被测试包装f The tested	小能够承受1.2m package is ca	pable of withs	anding a P	多多。	3		
备注 Comment	内包装: Li楞纸格栅。Inner package:corrugated paper. 包装件毛重(kg): 9.1 锂电池净重(kg): 8.1							
委托单位地址 Consignor Address		/ 邮政编码 Post Code				/		

批准

16-1in Approver:

Checker:

Compiler:



职务 Title:

副总工程师(Vice chief engineer)



DOC #:
MD600121
Print Date: 20-Jul-22

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Page 23 of 25

## 上海化工院检测有限公司 检 测 报 告

Shanghai Research Institute of Chemical Industry Testing Co., Ltd. Test Report

NO. 1120070215

2/3

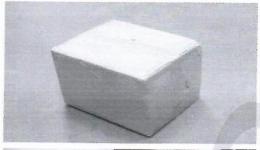
序号 No	检测项目名称 Name of Test Items	标准要求或标准条款号 Standard requirement or The Clause Number of Standard	检测结果 Test Result			本项结论 Conclusion	备注 Remark	
				包装件未破裂。电池未破损,无导致电池直接接触的移动,无内容物泄漏。 The package is not cracked. No damage to battery contained, No shifting of the contents to battery contact, No releasing of contents.		ents		
1 跌	1. 2米 跌落试验 1.2m Drop Test	联合国《关于危险货物运输的建议节 规章范本》(20th)特殊规定188条款 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Model Regulations (20th) special provisions 188		包装件未破裂。电池未破损,无导致电池直接接触的移动,无内容物泄漏。 The package is not cracked. No damage to battery contained, No shifting of the contents to battery contact, No releasing of contents.			合格 Passed	/
				包装件未破裂。电池未破损,无导致电池直接接触的移动,无内容物泄漏。 The package is not cracked. No damage to battery contained, No shifting of the contents to battery contact, No releasing of contents.		ents		
	测环境条件 tt Environment Condition	环境温度:23℃;环境湿度 Ambient temperature:23		Ambient	humidity:/%		× ×	
^	A IA military	检测项目 Test Item			1	- 4		
分包检测情况 Subcontracted Test Condition		分包实验室 Subcontracted Laboratory		称 ime	1	Post	Code	1
				地址 Address			话 el	/

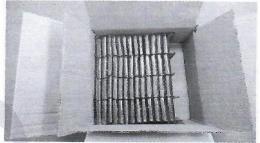
DOC #:
MD600121
Print Date: 20-Jul-22

# 上海化工院检测有限公司 检测报告-附图

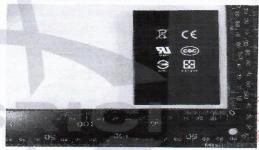
SRICI Testing Co., Ltd. Test Report—Appendix NO. 1120070215

3/3









Elo Touch Solutions, Inc 670 N. McCarthy Blvd. Suite 100 Milpitas, CA 95035 www.elotouch.com Rechargeable Li-ion Battery



Rechargeable Li-ion Battery 二次锂电池/二次鋰離子電池組 Model/型号/型號:E864455

Nominal voltage/标称电压/標稱電壓:3.8Vdc

Limited charging voltage/充电限制电压/充電限制電壓:

Capacity min./额定容量/额定容量:4000mAh 15.2Wh

Made in China /中国制造 /中國製造

\*\*\*报告结束\*\*\*