Material Safety Data Sheet

编号：ZLDGEL20_US1

日期：2025/01/01

Section 1. 产品名称及企业标识

CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

样品名称 Name of the sample	可充电锂离子电池组 Rechargeable Li-ion Battery Pack
样品型号 Type/Mode	EL20_U
额定参数 Rating Parameter	25.6V 20Ah 512Wh
生产单位 Manufacturer	浙江中力机械股份有限公司 EP Equipment Co.,LTD.
生产单位地址 Manufacturer address	浙江省安吉县灵峰街道霞泉村 XIAQUAN,LENGFENG,ANJI,ZHENGJIANG,CHINA
鉴定依据 Inspection according to	联合国《全球化学品统一分类和标签制度》(GHS)第八修订版 GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS(GHS) Eighth revised edition
应急电话 Emergency telephone call	+86-13858113964

Section 2. 成分/ 组成信息

COMPOSITION INFORMATION

化学成分 Chemical Composition	化学式 Chemical Formula	CAS 号 CAS No.	重量百分比(约) Weight (%) (About)
铝箔 Aluminum Foil	Al	7429-90-5	12.4
铜箔 Copper Foil	Cu	7440-50-8	16.1
磷酸铁锂 Lithium Iron Phosphate	LiFePO4	15365-14-7	30
碳 Carbon	C	7782-42-5	13.5
隔膜 Separator	(C3H6)n	9003-07-0	3.9
乙烯碳酸酯 Vinyl carbonate	C3H4O3	96-49-1	8
碳酸甲乙酯 Ethyl methyl carbonate	C4H8O3	623-53-0	12.5
六氟磷酸锂 Lithium hexafluorophosphate	LiPF6	21324-40-3	3.6
铅 lead	Pb	7439-92-1	无 Not Detected
镉 cadmium	Cd	7440-43-9	无 Not Detected
汞 mercury	Hg	7439-97-6	无 Not Detected

Section 3. 危险性概述

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

Section 4. 急救措施

First aid measures

●食入：引用两杯牛奶或水。如果当事人仍然清晰可以采取催吐的方法，并且立即就医。

Ingestion: Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician

●吸入：立即从暴露处移至空气清新处，如果呼吸困难给予输氧，立即就医。

Inhalation: Remove from exposure and move to fresh air immediately. Use oxygen if available.

●眼睛：万一接触，立即用大量的清水冲洗至少 15 分钟，翻起上下眼睑，直到化学的残留物消失
为止，迅速就医。

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

●皮肤：万一接触，用大量水冲洗至少 15 分钟，同时除去污染的衣物和鞋子，迅速就医。

Skin: Remove contaminated clothes and rinse skin with plenty of water or

shower for 15minutes, Get medical aid.

Section 5. 消防措施

Fire-fighting measures

●燃点：不适用

Flash Point: N/A.

●自燃温度：不适用

Auto-Ignition Temperature: N/A.

●灭火介质：大量水（降温），二氧化碳

Extinguishing Media: Water, CO2

●特殊灭火程序：自给式呼吸器

Special Fire-Fighting Procedures: Self-contained breathing apparatus.

●异常火灾或爆炸：当电芯暴露于过热的环境中时，安全阀可能会打开。

Unusual Fire and Explosion Hazards: Cell may vent when subjected to excessive heat-exposing battery contents.

●燃烧产生的危险物品：一氧化碳，二氧化碳，锂氧化物烟气

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

Section 6. 泄露应急处理

Accidental release measures

6.1 为防止电池材料泄露或释放采取的措施

Steps to be taken in case Material is Released or Spilled

●如果电池内部材料泄露，试验人员应立刻撤离试验区直到烟气消散。将通风设备打开吹散危险性气体。用抹布擦净试验区，清除溢出的液体，将泄露电池放进

塑料袋中，然后放进钢制容器。避免皮肤和眼睛接触或吸入有害气体。

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and contain for disposal.

6.2 废弃物处置方法

Waste Disposal Method

●电池的循环寿命是有限的，充满电后的电池使用时间比较短时，需要更换新的电池。

Despite being rechargeable, the battery has a limited life span, Replace when usage time between charges becomes short.

请提供所有电池用于回收符合当地的指导和监管。禁止扔入垃圾箱。

Please offer all used batteries for recycling according with local guidelines and regulation. Do not throw in the trash.

Section 7. 操作处置和储存
Handling and storage

7.1 操作处置和储存中的防范措施

Precautions to be taken during handling and storage

●禁止打开、毁坏或焚烧电池，因为电池有可能在这些处理过程中发生爆炸、破裂或泄露等事故。

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container.

●禁止将电池短路、过充、强制放电或扔入火中。禁止挤压刺穿电池或将电池浸入溶液中。

Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire.Do not crush or puncture the battery or immerse in any liquids.

●禁止物理或电滥用，禁止高温储存，最好将电池储存在阴凉、干燥、通风等温度变化较小的环境中。禁止将电池接触加热设备或将电池直接暴露与阳光中。

Avoid mechanical or electrical abuse. Preferably storage in cool, dry and ventilated area,which is subject to little temperature change. Storage at high temperatures should be avoided. Do not
place the battery near heating equipment, nor expose to direct sunlight for long periods.

7.2 其他防范措施

Other Precautions

●拆解、挤压、直接放入火中或高温条件下，电池可能发生爆炸和燃烧。禁止短接或将电池正负极错误的安装在设备中。

The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short circuit or install with incorrect polarity.

Section 8. 接触控制/个人防护

Exposure controls/personal protection

●呼吸防护：当电池排气阀打开时，应尽量使通风设备开至最大，避免将打开排气阀的电芯局限在某一狭窄空间内。正常操作条件下，呼吸保护是不必要的。

Respiratory Protection: In case of battery venting, provide as much ventilation as possible.Avoid confined areas with venting cell cores.

Respiratory Protection is not necessary under conditions of normal use.

●通风条件:正常使用条件下不需要。

Ventilation: Not necessary under conditions of normal use.

●防护手套:正常使用条件下不需要。

Protective Gloves: Not necessary under conditions of normal use.

●其他防护服装或设备:正常使用条件下不需要。

Other Protective Clothing or Equipment: Not necessary under conditions of normal use.

●电池开阀试验时应做好个人防护:呼吸防护，防护手套，防护服装和有护边的安全玻璃罩都要准备的。

Personal Protection is recommended for venting battery: Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

Section 9. 理学特性

Physical and chemical properties

●外形：方形

Appearance: Square

●气味： 泄漏时，有醚的气味

Odour: If leaking, smells of medical ether.

●酸碱度：不适用

pH: Not applicable as supplied.

●燃点：除单个电芯暴露试验外其他不适用。

Flash Point: Not applicable unless individual components exposed.

●可燃性：除单个电芯暴露试验外其他不适用。

Flammability: Not applicable unless individual components exposed.

●相对密度：除单个电芯暴露试验外其他不适用。

Relative density: Not applicable unless individual components exposed

●溶解性（水溶性）：除单个电芯暴露试验外其他不适用。

Solubility (water): Not applicable unless individual components exposed

●溶解性（其他）：除单个电芯暴露试验外其他不适用。

Solubility (other): Not applicable unless individual components exposed

Section 10. 稳定性和反应活性

Stability and reactivity

●稳定性：产品在第 7 节所述的条件下稳定。

Stability: Product is stable under conditions described in Section 7.

●应避免的条件：加热 70° C 以上或焚烧、变形、毁坏、粉碎、拆卸、过充电、短路或长时间暴露在潮湿的条件下。

Conditions to Avoid: Heat above 70° C or incinerate、deform、mutilate、crush、 disassemble、overcharge、short circuit or expose over a long period to humid conditions.

●应避免的材料：氧化剂，碱，水。

Materials to avoid: Oxidizing agents, alkalis, water.

●危险分解物：有毒烟雾，并可能形成过氧化物。

Hazardous Decomposition Products: Toxic Fumes, and may form peroxides.

●聚合危害：不适用

Hazardous Polymerization: N/A.

●如果发生泄露，避免与强氧化剂、无机酸、强碱或卤代烃接触。

If leaked, forbidden to contact with strong oxidizers、mineral acids、strong alkalies or halogenated hydrocarbons.

Section 11. 毒理学资料

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..

●下列情况下健康状况会恶化：万一发生与电池内部材料接触的事故，轻微或严重的刺激，都可能使皮肤出现干燥和灼烧的感觉，并且损坏靶器官（肝脏，肾脏）的神经。

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

Section 12. 生态学资料

Ecological information

●正常使用时，电芯/电池不会有生态和环境方面的影响。

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

Section 13. 废弃处置

Disposal consideration

●废弃电池不能直接当作普通垃圾处理，用塑料袋装好密封放入回收电池的垃圾桶或当作特殊垃圾处理。废弃电池不能丢进火中和置于高温环境，不要拆卸，同时不能刺穿和挤压等等。电池的包装纸盒和塑料盒可作为普通垃圾处理。

Depleted batteries shouldn’t be treated as ordinary trash. Worn out batteries must be discharged, placed in plastic bags and then put into recycle bin. Shouldn’t be thrown into fire or placed in high temperature. Shouldn’be dissected, pierced, crushed or treated similarly. The package and plastic box which contain batteries could be treated as ordinary trash. Best way is Recycling.

Section 14. 运输信息

Transport information

●电芯和电池遵从美国的有害物质管理规定，依据特殊规定188的IMDG规则。所有电芯和电池经测试都能通过美国测试标准手册的第三部分38.3章测试规范。

Lithium cells and batteries are subject to the requirements of the U.S. hazardous materials regulations pursuant to 49 CFR 173.185(b), and IMDG Code pursuant to Special Provision 188.

Each cell or battery has been tested under provisions of the UN Manual

of Tests and Criteria,Part III, Sub section 38.3.

●电芯/ 电池符合UN38.3(《联合国建议书》第三部分第38.3 条)、第64 版IATA-DGR包装规范中PI965(2023年) 的要求，并且确定在运输时符合相关的规定而不受限制。

Lithium cells and batteries are subject to the requirements of UN38.3 (UN Manual of Tests and Criteria, Part III, subsection 38.3), PI965 of IATA DGR 64th Edition 2023 Regular Bound Manual, and transported in accordance with applicable regulations and not restricted.

●运输电池时，电池必须经过打包，且有措施（例如将裸露的极耳绝缘）防止由于产热而演变的危险并短路防护。

Batteries must be packaged and offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals) and
protects against short circuits.

● UN编号 UN number：3480

● UN适当的运输名称 UN Proper shipping name

锂离子电池（包括锂离子聚合物电池）或锂离子电池；
LITHIUM ION BATTERIES(including lithium ion polymer batteries)

●运输风险类 Transport hazard class(es) : 9

●Packing Instruction (if applicable)包装方式（如果适用）

PI965

Section 15. 法规信息

Regulation information

法律信息

Law information

《危险物品规则》

《Dangerous Goods Regulations》

《对危险货物运输的有关规定的建议》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《国际海运危险货物规则》

《International Maritime Dangerous Goods》

《危险品安全运输技术指令》

《Technical Instructions for the Safe Transport of Dangerous Goods》

《危险货物分类和品名编号》

《Classification and code of dangerous goods》

《职业安全卫生法》

《Occupational Safety and Health Act》(OSHA)

《有毒物质控制法》

《Toxic Substance Control Act》(TSCA)

《消费产品安全法》

《Consumer Product Safety Act》(CPSA)

《联邦环境污染控制法》

《Federal Environmental Pollution Control Act》(FEPCA)

《石油污染法案》

《The Oil Pollution Act》(OPA)

《超级基金修正案和再授权法案III(302/311/312/313)》

《Superfund Amendments and Reauthorization Act TitleIII (302/311/312/313)》(SARA)

《资源保护及恢复法案》

《Resource Conservation and Recovery Act》(RCRA)

《安全饮用水法》

《Safety Drinking Water Act》(CWA)

《加州65提案》

《California Proposition 65》

《美国联邦法规》

《Code of Federal Regulations》(CFR)

根据所有联邦、州和地方法律。

In accordance with all Federal,State and local laws.

Section 16. 其他信息

Other information

缩略语和首字母缩写

Abbreviations and acronyms

ACGIH ： 美国政府及工业卫生协会

（ American Conference of Governmental Industrial Hygienists ）

BCF ： 生物浓缩因子（ Bioconcentration Factor ）

BOD ： 生化需氧量（ Biochemical oxygen demand ）

CAS ： 化学文摘社（ Chemical Abstracts Service ）

EC50 ： 半数效应浓度（ Median effective concentration ）

IARC ： 国际癌症研究中心（ International Agency for Research on Cancer ）

IATA ： 国际空运联合会（ International Air Transport Association ）

IECSC ： 中国现有化学品名录（ Inventory of Existing Chemical Substances in China ）

IMDG ： 国际海运危险货物（ International Maritime Dangerous Goods ）

LC50 ： 半数致死浓度（ lethal concentration , 50 percent kill ）

LD50 ： 半数致死剂量（ Iethal dose , 50 percent kill ）

NIOSH ： 美国国家职业安全健康研究所

（ US National Institute for occupational Safety and Health ）

NOEC ： 无可观察效应浓度（ No observed effect concentration ）

NTP ： 美国国家毒理学项目（ US National Toxicology Program ）

OSHA ： 美国职业安全与卫生管理局（ US occupational Safety and Health ）

PC-STEL：短时间接触容许浓度（Permissible concentration-Short Term Exposure Limit）

PC-TWA：时间加权平均容许浓度 （Permissible concentration-Time Weighted Average）

PEL ： 容许暴露限值（ Permissible Exposure Level ）

REL ： 推荐的接触限值（ Recommended Exposure Limit ）

RTECS ： 化学物质毒性作用登记（ Registry of Toxic Effects of Chemical Substances ）

STEL ： 短期接触限值（ Short Term Exposure Limit ）

TDG ： 联合国关于危险货物运输的建议书规章范本

（ Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations ）

TLV ： 阈限值（ Threshold Limit Value ）

TOC ： 总有机碳（ Total organic organic Carbon ）

TSCA ： 美国有毒物质控制法（ Toxic Substances Control Act of USA ）

TWA：时间加权平均（ Time Weighted Average ）

Report No.: 18270BC00046705
报告编号

MSDS REPORT
MSDS 报告

Client Name 委托单位	:	EP Equipment Co.,LTD. 浙江中力机械有限公司
Address 地址	:	Xiaquan Village, Dipu Town, Anji County, Zhejiang Province, China 浙江省安吉县递铺镇霞泉村
Product Name 产品名称	:	Rechargeable Li-ion Battery Pack 可充电锂离子电池组
Date 日期	:	Apr. 10, 2020 2020 年 04 月 10 日

Shenzhen Anbotek Compliance Laboratory Limited

深圳安博检测股份有限公司

Shenzhen Anbotek Compliance Laboratory Limited
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MATERIAL SAFETY DATA SHEET
材料安全数据清单

1. Chemical Product and Company Identification产品及申请公司信息

Sample name: 样品名称	Rechargeable Li-ion Battery Pack 可充电锂离子电池组
Battery model: 电池型号	EL20_U
Rating: 参数	Nominal Voltage 标称电压: 25.6V Rated Capacity 额定容量: 20Ah, 512Wh Weight 重量: 5421.3g
Manufacturer: 制造商	EP Equipment Co.,LTD. 浙江中力机械有限公司
Address: 制造商地址	Xiaquan Village, Dipu Town, Anji County, Zhejiang Province, China 浙江省安吉县递铺镇霞泉村
Factory: 工厂	EP Equipment Co.,LTD. 浙江中力机械有限公司
Address: 工厂地址	Xiaquan Village, Dipu Town, Anji County, Zhejiang Province, China 浙江省安吉县递铺镇霞泉村
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Date of received: 接收日期	Mar. 30, 2020 2020 年 03 月 30 日
Date of report: 报告日期	Mar. 31, 2020 2020 年 03 月 31 日

Written by: 朱浩
编写

Approved by: 杨泽
批准

Code: AB-BAT-79-b

2. Composition/Information on Ingredients原料成分信息

Chemical Name 化学名称	Percent of Content 含量百分比	CAS No. CAS 编号
Aluminium 铝	5%~7%	7429-90-5
Carbo 石墨	17%~19%	7782-42-5
Lithium Iron（II)phosphate 磷酸铁锂	33%~36%	15365-14-7
Copper 铜	9%~11%	7440-50-8
Ethylene carbonate 乙烯碳酸酯	20%~24%	96-49-1
Methylene carbonate 碳酸钾乙醇		623-53-0
Lithium hexafluorophosphate 六氟磷酸锂		7440-02-0

3. Hazards Summarizing 危险概述

Danger sort 危险类别: N/A

Routes of entry进入途径:

1. Eyes and Skin – When leaking, the electrolyte solution contained in the battery irritates to ocular tissues and the skin.
   眼睛和皮肤 – 当电池泄漏时，电池内部的电解液会刺激眼膜和皮肤，甚至有疼痛感。
2. Inhalation－Respiratory (and eye) irritation may occur if fumes are released due heat or an abundance of leaking batteries.
   吸入 – 电池大量泄漏产生热量导致冒烟，吸入会刺激呼吸系统。
3. Ingestion – The ingestion of the battery can be harmful. Content of open battery can cause serious chemical burns of mouth, esophagus and gastrointestinal tract.
   吞食 – 吞食电池对身体有很大伤害。电池里含的物质会引起嘴、食道和胃肠道化学灼伤。

Health harm 健康损害:

Exposure to leaking electrolyte from ruptured or leaking battery can cause电池破裂导致电解液外漏会导致以下伤害：

1. Inhalation－Burns and irritation of the respiratory system, coughing, wheezing, and shortness of breath.
   吸入－灼伤或刺激呼吸系统，可能会产生咳嗽、喘息和呼吸浅短等现象。
2. Eyes－Redness, tearing, burns. The electrolyte is corrosive to all ocular tissues.
   眼睛－红肿，疼痛，灼伤。电解液会腐蚀视网膜。

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www.anbotek.com

3. Skin—The electrolyte is corrosive and causes skin irritation and burns.
皮肤—电解液有腐蚀性，会刺激皮肤甚至灼伤皮肤。
4. Ingestion—The electrolyte solution causes tissue damage to throat and gastrointestinal track.
吞食—电解液会导致咽喉组织损伤和胃肠道损伤。

Environment harm 环境危害: Not necessary under conditions of normal use.正常使用条件下没有危害。

Explosion danger 爆炸危险: The battery may be explosive at high temperature (above 150°C) or exposing to the fire.电池在高温条件下（大于 150°C）或者置于火中会导致爆炸。

4. First Aid Measures 急救措施

Skin contact: Not anticipated. If the battery is leaking and the contained material contacts the skin, flush with copious amounts of clear water for at least 15 minutes.
Eye contact: Not anticipated. If the battery is leaking and the contained material contacts eyes, flush with copious amounts of clear water for at least 15 minutes. Get medical attention at once.
Inhalation: Not anticipated. If the battery is leaking, remove to fresh air. If irritation persists, consult a physician.
Ingestion: Not anticipated. If the battery is leaking and the contained material is ingested, rinse mouth and surrounding area with clear water at once. Consult a physician immediately for treatment.
皮肤接触: 没有事先预料的，如果电池漏液接触到皮肤上，立即用大量的清水冲洗至少 15 分钟。
眼睛接触: 没有事先预料的，如果电池漏液接触到眼睛上，立即用大量的清水冲洗至少 15 分钟，并立即就医。
吸入: 没有事先预料的电池泄漏，转移到空气新鲜的地方，如果刺激性还存在，请咨询医生。
吞食: 没有事先预料的，如果电池漏液并且吞食了电池原料，立即用清水冲洗嘴部及周围部位，并就医治疗。

5. Fire Fighting Measures 消防措施

Unusual Fire and Explosion Hazards: Battery may explode or leak potentially hazardous vapors subject to: exposed to excessive heat (above the maximum rated temperature as specified by the manufacturer) or fire, over-charged, short circuit, punctured and crushed.
Hazardous Combustion Products: Fire, excessive heat, or over voltage conditions may produce hazardous decomposition products. Damaged batteries can result in rapid heating and the release of flammable vapors.

Extinguishing Media: Dry chemical type extinguishers are the most effective means to extinguish a battery fire. A CO_2 extinguisher will also work effectively.
Fire Fighting Procedures: Use a positive pressure self-contained breathing apparatus if batteries are involved in a fire. Full protective clothing is necessary. During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.
异常着火和爆炸危险: 电池爆炸或漏液可能是由以下原因导致： 暴露于高温环境 (超过制造商规定的最大额定温度) 或者火中，电池过充电，短路，刺穿和挤压。
产品烧毁危害: 着火，过热或者过压条件可能会导致产品分解。损坏的电池会导致快速升温和释放可燃性气体。
灭火仪器: 对于电池着火灭火最有效的是干燥的化学型灭火器，二氧化碳灭火器也可。
消防程序: 如果火灾中有电池，要使用正压呼吸装置，全防护服是必不可缺的，在使用水设备时要小心谨慎，因为燃烧的一些可燃性颗粒会从火中喷射出。

6. Accidental Release Measures偶然的释放措施

The material contained within the battery would only be released under abusive conditions. In the event of battery rupture and leakage, collect all the released materials that are not hot or burning in an appropriate waste disposal container while wearing proper protective clothing and ventilate the area. Placed in approved container and disposed according to the local regulations.
电池内部的原料只会在恶劣条件下释放。万一电池破裂和泄漏，收集所有不热和燃烧后的残渣置于废料处理箱，要穿上防护服和在通风的地方进行。放置在被批准的容器并按照规程处理废料。

7. Handling and Storage 操作和贮存

Handling 操作:

1. Batteries are designed to be recharged. However, improperly charging a battery may cause the battery to flame. When charging the battery, use dedicated chargers and follow the specified conditions.
   电池被设计为可充电的，然而不正确的充电方式可能会导致电池着火。当给电池充电时，要使用专用的充电器并按照指定的充电条件进行。
2. Never disassemble or modify a battery.不拆解电池。
3. Do not immerse, throw, and wet a battery in water. 不浸没、投掷和用水弄湿电池。
4. Should a battery unintentionally be crushed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid the inhalation of any vapors that may be emitted. 如果电池被无意挤压而导致内部物质释放，必须带上橡胶手套处理所有的电池成分，避免吸入释放的任何气体。
5. Short circuit causes heating. In addition, short circuit reduces the life of the battery

and can lead to ignition of surrounding materials. Physical contact with to short-circuited battery can cause skin burn. 短路会引起电池过热。此外，短路会使电池寿命大大减少，甚至会导致周围材料着火。身体接触短路的电池会导致皮肤灼伤。

6. Avoid reversing the battery polarity, which can cause the battery to be damaged or flame. 避免颠倒电池极性，可能会引起电池损坏或者燃烧。
7. In the event of skin or eye exposure to the electrolyte, refer to Section 4, First Aid Measures. 如果皮肤或者眼睛接触到电解液，参考第四项并立即采取急救措施。

Storage 贮存:

1. Batteries should be separated from other materials and stored in a noncombustible, well ventilated, sprinkler-protected structure with sufficient clearance between walls and battery stacks. Do not place batteries near heating equipment, nor expose to direct sunlight for long periods.电池应该和其他材料分开并且贮存在通风且不易燃烧的地方。自动灭火装置应与墙和电池组保持足够的间隙。不要把电池靠近加热装置，或者直接长时间的暴露于阳光直射的区域。
2. Do not store batteries above 35℃ or below –20℃. Store batteries in a cool (about 20±5℃) in a long time, dry and ventilated area that is subject to little temperature change. Elevated temperatures can result in reduced battery cycle life. Battery exposure to temperatures in excess of 60℃ will result in the battery venting flammable liquid and gases.不要在35℃以上和-20℃以下的环境贮存电池。电池应该贮存在干燥的、通风良好的阴凉区域（大约20±5℃）。升高温度会导致电池循环寿命减少。电池暴露于60℃以上的温度可能会导致电池泄漏可燃性液体和气体。
3. Keep batteries in original package until use and do not jumble them.保持电池最原始的包装直到使用时，不要把电池弄混乱。

8. Exposure Controls/Personal Protection 暴露控制/自我防护

Engineering Controls: Keep away from heat and open flame.
Ventilation: Not necessary under conditions of normal use. In case of abuse, use adequate mechanical ventilation (local exhaust) for the battery that vent gas or fumes.
Respiratory Protection: Not necessary under conditions of normal use. If battery is burning, leave the area immediately. During fire fighting fireman should use self-contained breathing, full-face respiratory equipment. Fires may be fought but only from safe fire fighting distance, evacuate all persons from the area of fire immediately.
Eye Protection: Not necessary under conditions of normal use. Use safety glasses with side shields if handling a leaking or ruptured battery.
Body Protection: Not necessary under conditions of normal use. Use rubber apron

and protective working in case of handling a leaking of ruptured battery.
Protective Gloves: Not necessary under conditions of normal use. Use chemical resistant rubber gloves if handling a leaking or ruptured battery.
Others: Use good chemical hygiene practice. Wash hands thoroughly after cleaning-up a battery spill caused by leaking battery. No eating, drinking, or smoking in battery storage area.
工程控制: 远离高温和明火。
通风设备: 正常使用条件下是不必要的。为了防止不合理的滥用，要使用合适的机械通风设备排出电池产生的气体和黑烟。
呼吸防护: 正常使用条件下是不必要的。如果电池着火，立即远离着火区域。在灭火期间要使用自给自足的全脸防护的呼吸装置。要保持安全的灭火距离并立即疏散着火区域的所有人员。
眼睛防护: 正常使用条件下是不必要的。处理泄漏或者破裂的电池时要戴上有边罩的防护眼镜。
身体防护: 正常使用条件下是不必要的。处理泄漏或者破裂的电池时要穿上有橡胶围裙或者安全工作服。
防护手套: 正常使用条件下是不必要的。处理泄漏或者破裂的电池时要戴上抗化学腐蚀的橡胶手套。
其他: 保持良好的化学卫生习惯。清理完泄漏电池的漏液后要彻底地清洗手。在贮存电池的区域不吃东西，不喝酒，不吸烟。

9. Physical and Chemical Properties 物理和化学特性

State 状态:	Solid 固体
Odor 气味:	N/A
PH PH 值:	N/A
Vapor pressure 气压:	N/A
Vapor density 气体密度:	N/A
Boiling point 沸点:	N/A
Solubility in water 在水中的溶解度:	Insoluble 不溶
Specific gravity 比重:	N/A
Density 密度:	N/A

10. Stability and Reactivity 稳定性和反应活性

Conditions to Avoid: Do not heat, throw into fire, disassemble, short circuit, immerse in water or overcharge, etc.
Incompatibility: None during normal operation. Avoid exposure heat, open flame and corrosives.
Hazardous Polymerization: Will not occur.
Hazardous Decomposition Products: The battery may release irritative gas once the electrolyte leakage.
稳定性: 稳定
避免条件: 不能加热，不要置于火中，不随便拆解，不短路，不浸入水中，不过充等。
不适用性: 正常操作条件下没有。避免暴露在高温、明火和腐蚀性物质环境中。
聚合物危害:不会发生。
拆解产品危害: 一旦电解液泄漏，电池会挥发出刺激性气体。

11. Toxicological Information有害物质信息

The battery does not elicit toxicological properties during routine handling and use. If the battery is opened through misuse or damage, discard immediately. Internal components of cell are irritant and sensitization.
Irritancy: The electrolytes contained in this battery can irritate eyes with any contact. Prolonged contact with the skin or mucous membranes may cause irritation.
Sensitization: No information is available.
Teratogenicity: No information is available.
Carcinogenicity: No information is available.
Mutagenicity: No information is available.
Reproductive toxicity: No information is available.
电池在正常的操作和使用中不能有发出有毒物质。如果由于不正确的使用或破坏导致电池裂开，立即丢掉。电芯内部成分有刺激性甚至诱发过敏。
刺激性: 电池内部的电解液会刺激眼睛。皮肤或黏膜长时间接触或产生刺激效应。
过敏: 没有可用的信息。
致畸胎性: 没有可用的信息。
致癌性: 没有可用的信息。
诱变性: 没有可用的信息。
生殖毒性: 没有可用的信息

12. Ecological Information生态信息

1. When properly used and disposed, the battery does not present environmental hazard.
   正确使用电池时不会造成环境损害。
2. The battery does not contain mercury, cadmium, or lead.
   电池不能含有汞、镉、铅。
3. Do not let internal components enter marine environment. Avoid releasing to water ways, wastewater or ground water.
   不要让电池内部成分进入水生态。避免排入水路系统、废水和地下水中。

13. Disposal Considerations 废弃处理

1. Disposal of the battery should be performed by permitted, professional disposal firms knowledgeable in Federal, State or Local requirements of hazardous waste treatment and hazardous waste transportation.处理电池要有许可，在联邦、国家或者当地危害物质处理部门和危害物质运输部门要求的专业处理知识。
2. The battery should be compl
3. etely discharged prior to disposal and/or the terminals taped or capped to prevent short circuit. When completely discharged it is not considered hazardous.处理电池之前要完全放电或者把电池末端用胶带粘上防止短路。完全放电的电池被认为是没有危害的。
4. The battery contains recyclable materials. Recycling options available in your local area should be considered when disposing of this product, through licensed waste Carrier.
   电池包含可循环利用的材料。在当地回收利用这些处理掉的产品时，要取得废弃物处理的授权。

14. Transport Information运输信息

According to PACKING INSTRUCTION 965,966,967,952 of IATA DGR 60th Edition for transportation, the special provision 230,240 of IMDG (inc Amdt 38-16). The batteries should be securely packed and protected against short-circuits. Examine whether the package of the containers are integrate and tighten closed before transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles. Don't put the goods together with oxidizer and chief food chemicals. The transport vehicle and ship should be cleaned and sterilized before transport. During transport, the vehicle should prevent exposure, rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, the assemble place should keep away from bedroom and kitchen, and isolated from the

engine room, power and fire source. Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don't stop over in the residential area and congested area.
根据包装说明的 IATA DGR 第 60 期 965,966,967,952 运输、IMDG 的特殊条款 230,240(inc Amdt 39-18)。电池应牢固地填充，防止短路。检查集装箱的包装是否在运输前整合并拧紧确定没有一个货物掉落,跌落,和破损,防止货物堆崩溃。不要把货物与氧化剂，食品放在一起。运输车辆和船舶在运输前应清洗和消毒,运输车辆应避免接触雨水和高温。停留时,车辆应远离火和热源。海运时,装配位置应远离卧室和厨房,并从机舱、电源和火源处隔离。
公路运输情况下,司机开车应该按照规定路线,不要在居民区和人口稠密区停留。

(a) UN number UN 编号

3480&3481&3171

(b) UN Proper shipping name UN 适当的运输名称

LITHIUM ION BATTERIES (including lithium ion polymer batteries)or; LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)
BATTERY-POWERED VEHICLE or BATTERY-POWERED EQUIPMENT
锂离子电池（包括锂离子聚合物电池）或锂离子电池；装在设备或锂离子电池中的电池；设备(包括锂离子聚合物电池),电池驱动车辆或电池驱动设备。

(c) Transport hazard class(es)运输风险类

9

(d) Packing Instruction (if applicable)包装方式（如果适用）

965 IA, 966 I, 967 I

(e) Marine pollutant 海洋污染物(Yes/No)

No

(f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code) 散装运输

No information available.无可用信息。

(g) Special precautions 特别预防措施

No information available.无可用信息。

15. Regulatory Information监管信息

The transport of rechargeable lithium-ion batteries regulated by the united nations as detailed in the "model Regulations on the transport of dangerous Goods Ref. ST/SG/AC.10/1 Revision 20 2017".

Defined by UN in the "Recommendations on the transport of Dangerous Goods Chapter 38.3 Manual of Tests and Criteria Ref. ST/SG/AC.10/11 Rev.6/Amend.1

2017". The Lithium-ion Cells and the battery Packs may or may not be assigned to the UN No. 3480 Class-9 that is restricted for transport.

可充电可充电锂离子电池组的运输受联合国的统一监管，详见"关于危险货物运输的新型法规参考ST / SG / AC.10/1 20版本 2017"。

联合国在"关于危险货物第38.3章试验和标准手册参考ST / SG / AC.10 / 11第六修订版修正1 2017"里明确规定，锂离子电芯和电池组有可能或可能不被划分到UN3480 第九类危险品（运输受限）。

16. Other Information其他信息

Prepared Department 申请商: EP Equipment Co.,LTD.
浙江中力机械有限公司

-- End of report --
-- 报告结束 --