# 安全技术说明书
# SAFETY DATA SHEET

## 第一部分 化学品及企业标识
## SECTION1 PRODUCT AND COMPANY IDENTIFICATION

**中文名称：**可充锂离子电池
**Product Name：**Rechargeable Li-ion Battery

**型号/规格 Type/Model：**IFR18500 1200mAh 3.2V 3.84Wh

**企业名称：**珠海鹏辉能源有限公司
**Company:**ZHUHAI GREAT POWER ENERGY CO., LTD.

**地址：**广东省珠海市斗门区井岸镇新青五路 2 号
**Address:**NO.2 XINQING FIFTH ROAD,JING'AN TOWN,DOUMEN DISTRICT,ZHUHAI CITY,GUANGDONG PROVINCE,P.R.C

珠海鹏辉能源有限公司 技术部

**邮编 Postcode：**519100

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**传真号码 Fax No.:**/

**应急咨询电话 Emergency Phone:**+86 0756-6333555

## 第二部分 危险性概述
## SECTION2 HAZARDS IDENTIFICATION

本品不在 GHS 体系涵盖的范围内,不属于危险化学品。
**主要危险性:**
**火灾或爆炸危险：**当锂离子电池损坏或处理不当(机械损伤或过度充电)，其内部的易燃液态电解质在温度高于 150℃时会泄漏、着火和产生火花；该类物品可能迅速燃烧并伴有闪燃；可能会引燃邻近的其他电池
**健康危害：**电池的电解质会刺激皮肤、眼睛和黏膜组织。燃烧可能产生刺激性、腐蚀性和/或毒性气体。烟雾可能导致头晕或窒息。
The product is outside of the scope of GHS system.
**Main Hazards :**
**Fire or Explosion Hazards :**Lithium ion battery contains flammable liquid

electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (>150’℃), when damaged or abused (e. g., mechanical damage or electricalovercharging). May burn rapidly with flare-burning effect. May ignite other batteries in close proximity.

**Health Hazards:**

Contact with the electrolyte of battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating,corrosive and/or toxic gases, Fumes may cause dizziness or suffocation.

## 第三部分 成分/组成信息
## SECTION3 INFORMATION ON INGREDIENTS

| Chemical Composition 化学名称 | | Chemical Formula 分子式 | CAS No: CAS 号： | Weight(%) 百分含量（%） |
|---|---|---|---|---|
| Lithium iron phosphate 磷酸铁锂 | | LiFePO4 | 15365-14-7 | 47 |
| Graphite 石墨 | | C | 7782-42-5 | 20.2 |
| Organic Electrolyte 有机电解液 | 碳酸乙烯酯(EC) | C3H4O3 | 96-49-1 | 4.71 |
| | 碳酸甲乙酯(EMC) | C4H8O3 | 623-53-0 | 0.78 |
| | 碳酸二乙酯（DEC） | C5H10O3 | 105-58-8 | 6.28 |
| | 碳酸丙烯酯（PC） | C4H6O3 | 108-32-7 | 1.96 |
| | 六氟磷酸锂（LiPF6） | F6LiP | 21324-40-3 | 1.57 |
| Polypropylene 聚丙烯 | | $C_3H_6$ | 9003-07-0 | 1.2 |
| Copper 铜 | | Cu | 7440-50-8 | 6.5 |
| Aluminum 铝 | | Al | 7429-90-5 | 4.1 |
| Nickel 镍 | | Ni | 7440-02-0 | 5.7 |

## 第四部分 急救措施
## SECTION4 FIRST-AID MEASURES

**皮肤接触:**若接触到电池内的物质，脱去受污染的衣物和鞋袜，立即用流动清水冲洗 20 分钟以上。如刺激持续，就医。

**眼睛接触:**若接触到电池内的物质，立即提起眼脸，立即用流动清水冲洗 20 分钟以上。如刺

激持续，就医。

**吸入:**若吸入电池内的物质，立即脱离现场至空气新鲜处。若呼吸困难，给氧;若呼吸停止，人工呼吸。就医。

**食入:**若食入电池内的物质，禁止催吐。立即就医。

**最重要的急性和延迟症状/影响:**无资料。

**必要时注明立即就医及所需的特殊治疗:**无资料。

**Skin Exposure:**If in contact with the internal materials of battery, remove the contaminated clothing, shoes and socks,immediately flush with plenty of water for at least 20 minutes. Call a physician.

**Eye Exposure:**If in contact with the internal materials of battery, lift your eyelids immediately and rinse them withrunning water for more than 20 minutes. Call a physician.

**Inhalation Exposure:**If the internal materials of battery are inhaled, immediately remove to fresh air, If breathing is difficult.give oxygen. If not breathing,give artificial respiration, Call a physician.

**Oral Exposure:**Do not induce vomiting if the internal materials of battery are swallowed, Call a physician immediately.

**Most Important Symptoms/Effects, Acute and Delayed:**No data available.

**Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary:**No data available.

## 第五部分 消防措施
## SECTION5 FIRE FIGHTING MEASURES

**适当的灭火剂:**可用水幕和普通泡沫灭火剂灭火。

**化学品产生的具体危险:**燃烧可能产生刺激性、腐蚀性和或毒性气体。烟雾可能导致头晕或窒息。

**消防人员的特别防护行动:**消防员应戴自给正压式呼吸器，穿消防防护服以防止皮肤和眼睛接触。在上风处灭火。不相关人员疏散至安全区域。

**Suitable Extinguishing Media:**Water spray or regular foam.

**Specific Hazards Arising from the Chemical :**May decompose upon combustion to generate irritating, corrosive or toxic fumes, Fumes may cause dizziness or suffocation.

**Special Protective Action for Fire-fighters:**

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes, Fire-extinguishing work is done from the windward, Uninvolved persons should evacuate to a safe place.

## 第六部分 泄漏应急处理
## SECTION6 ACCIDENTAL RELEASE MEASURES

**个人防护措施、防护设备和应急程序：**使用个人防护设备。确保足够的通风。确保人群远离泄漏区或处于泄漏区上风向。不相关人员禁止进入。移除所有点火源。

环境防护措施：避免泄漏物进入地表、沟渠或水域。清洗废水避免直接释放至环境中。

**控制和清洁的方法和材料:**如电解液泄漏，用土、沙或其他不可燃材料吸附，漏损的电池和污浊的吸附物应放入金属容器。

**Personal Precautions, Protective Equipment and Emergency Procedures:**Use personal protective equipment, Ensure adequate ventilation. Keep people away from and upwind of spill/leak, Entry to noninvolved personnel should be controlled around the leakage area by roping off.Remove all sources of ignition.

**Environmental Precautions:**

Avoid leakage getting into the earth, ditches or waters, Avoid directly releasing the washing waste-water into the environment.

**Methods and Materials for Containment and Cleaning up:**If the electrolyte leaks, use soil, sand or other non-combustible materials to absorb. The leaked batteries and dirty adsorbents should be placed in metal containers.

## 第七部分 操作处置与储存
## SECTION7 HANDLING AND STORAGE

**安全操作的防护措施:**操作人员应经过培训，严格遵守操作规程。建议操作人员穿一般作业防护服，戴安全手套。远离火种、热源。避免高温。工作场所严禁吸烟。工作场所应有通风系统和设备。避免随意拆卸电池和弄错正负极。须牢固固定在内包装中,以有效防止短路和防止可导致短路的移动。万一电池内的物质泄漏，避免眼睛、皮肤直接接触，避免吸入。应与强氧化剂、易燃物和腐蚀品分开存放。

**安全储存的条件，包括一切不相容性:**储存于阴凉、通风及干燥的库房内。远离火种、热源。避免高温。应与强氧化剂、易燃物和腐蚀品分开存放。须牢固在内包装中，以有效防止短路和防止可导致短路的移动。储存区配备相应品种和数量的消防器材、泄漏应急处理设备和合适的收容材料。

**Precautions for Safe Handling:**Operators should be trained and strictly abide by operating procedures. Wear appropriate protective clothing and safety gloves. Keep away from ignition sources, heat and flame. No smoking at working site. Handling is performed in a well ventilated place, Avoid disassembling the battery at will and reversing battery polarity within the battery assembly, The battery must be firmly packed in inner packaging so as to effectively prevent short circuits and short circuits caused by movement, If the electrolyte leaks, avoid directly contacting with eyes and skin. Avoid inhalation. It should be stored separately from strong oxidizing agents, flammables and corrosives.

**Conditions for Safe Storage, Including Any Incompatibilities:**Store in a cool, dry, and well-ventilated arca. Keep away from ignition sources, heat and flame.Incompatibilities.Strong oxidizing agents, combustible materials and corrosives. The battery must be firmly packed in inner packaging so as to effectively prevent short circuits and short circuits caused by movement. Storage place should be equipped with appropriate varieties and quantities of fire fighting equipment and leakage emergency treatment equipment.

## 第八部分 接触控制/个体防护
## SECTION8 EXPOSURE CONTROL/PPE

**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。
**通风条件：**正常使用条件下不必考虑。
**防护手套：**正常使用条件下不必考虑。
其他防护服装或设备：正常使用条件下不必考虑。
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是要准备的。
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.
Ventilation： Not necessary under conditions of normal use.
Protective Gloves： Not necessary under conditions of normal use.
Other Protective Clothing or Equipment：Not necessary under conditions of normal use.
Personal Protection is recommended for venting battery：
Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

## 第九部分 理化特性
## SECTION9 PHYSICAL/CHEMICAL PROPERTIES

**外观与形状:**圆柱形无味的固体电池。
**气味:**无臭
**PH 值:**8-9
**溶解性:**部分溶于水
**熔点/凝固点:**>300℃
**沸点、初始沸点和沸程:**无资料
**闪点(闭杯):**无资料
**密度/相对密度:**无资料
**运动黏度:**无资料
**燃烧上下极限或爆炸极限:**无资料
**蒸气压:**无资料
**相对蒸气密度:**无资料
**n-辛醇/水分配系数(对数值):**无资料
**自燃温度:**无资料
**分解温度:**无资料
**颗粒特征:**无资料
**易燃性(固体、气体):**无资料

**Appearance and Characters:**Solid batteries for the cylindrical tasteless
**Odor :**Odorless
**pH Value:**8-9
**Solubility :**Partial soluble in water
**Boiling Point,Initial Boiling Point and Boiling Range:**No data available
**Melting Point/Freezing Point:**>300℃
**Flash Point(Closed Cup):**No data available
**Density/Relative Density:**No data available
**Kinematic Viscosity:**No data available
**Lower/Upper Explosion Limit/Flammability Limit:**No data available
**Vapour Pressure :**No data available
**Partition CoefficientN-Octanol/Water(Log Value):**No data available
**Autoingnition Temperature :**No data available
**Relative Vapor Density:**No data available
**Decomposition Temperature :**No data available
**Particle Characteristics:**No data available
**Flammability(Solid, Gas):**No data available

## 第十部分 稳定性与反应活性
## SECTION10 STABILITY AND REACTIVITY

**反应性:**无资料。
**化学稳定性:**常温常压下稳定。
**危险反应的可能性:**无资料。
**应避免的条件:**误操作，明火，高温，机械滥用，过充电，防止短路和防止可导致短路的移动。
**不相容材料:**强氧化剂、易燃物和腐蚀品
**危害性分解产物:**碳的氧化物、金属氧化物等。
**Reactivity:**No data available.
**Chemical Stability:**Stable under normal temperatures and pressures.
**Possibility of Hazardous Reactions:**No data available.
**Conditions to Avoid:**
Avoid misoperation, exposure to heat and open flame. Avoid mechanical or electrical abuse and overcharge.Prevent short circuits and short circuits caused by movement.
**Incompatible Materials:**
Strong oxidizing agents, combustible materials and corrosives.
**Hazardous Decomposition Products:**Carbon oxides,metal oxides,etc.

## 第十一部分 毒理学资料
## SECTION11 TOXICOLOGICAL INFORMATION

**急性毒性:**无资料。
**皮肤腐蚀/刺激:**电池内的电解液对皮肤有刺激性。

**严重眼损伤/眼刺激:**电池内的电解液对眼睛有刺激性。
**呼吸致敏:**无资料。
**皮肤致敏:**无资料。
**生殖细胞致突变性:**无资料。
**致癌性:**无资料。
**生殖毒性:**无资料。
**特定目标器官毒性-单次接触:**无资料。
**特定目标器官毒性-重复接触:**无资料。
**吸入危险:**无资料。
**Acute Toxicity:**No data available.
**Skin Corrosion/Irritation:**
The electrolyte in the battery causes skin irritation.
**Serious Eye Damage/lrritation:**
The electrolyte in the battery causes eye irritation.
**Respiratory Sensitization:**No data available.
**Carcinogenicity:**No data available.
**Skin Sensitization:**No data available.
**Germ Cell Mutagenicity:**No data available.
**Reproductive Toxicity:**No data available.
**Specific Target Organ Toxicity -Single Exposure:**No data available.
**Specific Target Organ Toxicity -Repeated Exposure:**No data available.
**Aspiration Hazard:**No data available.

## 第十二部分 生态学资料
## SECTION12 ECOLOGICAL INFORMATION

**毒性:**无资料。
**持久性和降解性:**无资料。
**潜在的生物累积性:**无资料。
**在土壤中的流动性:**无资料。
**其他有害效应:**无资料。
**Toxicity:**No data available.
**Persistence and Degradability:**No data available.
**Bioaccumulative Potential:**No data available.
**Mobility in Soil:**No data available.
**Other Adverse Effects:**No data available.

## 第十三部分 废弃处理
## SECTION13 DISPOSAL CONSIDERATION

**废弃处置方法:**废弃电池的处置应符合《中华人民共和国固体废物污染环境防治法》、《废电池污染防治技术政策》等有关法律、法规、政策和标准的要求。建议交给具有资格的化学废物处理部门处置。对于用过的而且将被运送去销毁或回收的电池，在运输前应对其仔细检

查，以确保每节电池都是完好无损而且适合运输的。

**Disposal Methods :**

The disposal of discarded battery shall comply with the requirements of relevant laws, regulations,policies and standards such as the "Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste" and "Technical Policy for the Prevention and Control of Waste Battery Pollution". Contact a licensed professional waste disposal service to dispose of wastes. Used battery being transported for disposal or reclamation should be carefully checked prior to shipment to ensure the integrity of each battery and its suitability for transport.

## 第十四部分 运输信息
## SECTION14 TRANSPORT INFORMATION

**一般包装要求:**

1.电芯或电池必须加以保护，以防止短路。

2.电芯或电池或设备必须包装在合适的坚固的外包装中。

3.如果电池包含在设备中，设备必须在外包装内固定，防止移动，并进行包装，以防止意外激活。

**General packaging requirement:**

1. The cells or batteries must be protected so as to prevent short circuits.

2. The cells or batteries or equipment must be packed in suitable strong outer packaging.

3. If batteries contained in equipment, equipment must be secured against movement within the outer packaging and be packed so as to prevent accidental activation.

| **空运，依据 IATA-DGR 第 66 版（2026 年 1 月 1 日至 12 月 31 日生效）**<br>**Air transportation, according to IATA-DGR 66th Edition (Effective 1 January-31 December 2026)** | |
|---|---|
| UN 编号+运输专用名<br>UN Number + PSN | **UN 3480, 锂离子电池**<br>**UN 3480, LITHIUM ION BATTERIES** |
| 危险等级<br>Hazard Class | 第九类危险品<br>Class 9 |
| 包装要求<br>Packaging requirement | 坚固包装，按照包装说明 965 IB 部分要求打包<br>Strong package, packaging according to PACKING INSTRUCTION 965, section IB |
| UN 编号+运输专用名<br>UN Number + PSN | **UN 3481, 锂离子电池与设备一起包装**<br>**UN 3481, 锂离子电池在设备中**<br>**UN 3481, LITHIUM ION BATTERIES PACKED WITH EQUIPMENT or**<br>**UN 3481, LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT** |
| 危险等级<br>Hazard Class | 不受限制<br>Not restricted |
| 包装要求<br>Packaging requirement | 坚固包装，按照包装说明 966-967 II 部分要求打包<br>Strong package, packaging according to PACKING INSTRUCTION |

| | |
|---|---|
| | 966-967, section II |
| **海运，依据 IMO IMDG Code (Amend 42-24)2024 版**<br>**Sea transportation, according to IMO IMDG Code (Amend 42-24) 2024 Edition** | |
| UN 编号+运输专用名<br>UN Number + PSN | **UN 3480, 锂离子电池 或**<br>**UN 3481, 锂离子电池与设备一起包装，或**<br>**UN 3481, 锂离子电池安装在设备中**<br>**UN 3480, LITHIUM ION BATTERIES, or**<br>**UN 3481, LITHIUM ION BATTERIES PACKED WITH EQUIPMENT, or**<br>**UN 3481, LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT** |
| 危险等级<br>Hazard Class | 不受限制，根据特殊条款 188<br>Not restricted, according to sp188 |
| 包装说明<br>Package instruction | 坚固包装，按照 sp188 相应要求进行包装<br>Strong package, Packaging in accordance to corresponding requirements of sp188 |
| 应急措施编号 EmS No. | F-A, S-I |

## 第十五部分 法规信息
## SECTION15 REGULATORYINFORMATION

**国内法规:**

《危险货物分类和品名编号》（GB 6944）
《化学品安全技术说明书内容和项目顺序》（GB/T 16483）
《化学品安全技术说明书编写指南》（GB/T 17519）
《危险货物道路运输规则》(JT/T617)
《危险货物品名表》(GB 12268)
《铁路危险货物品名表》(TB/T 30006)

**国际法规:**

《全球化学品统一分类和标签制度》（GHS）
联合国《关于危险货物运输的建议书 规章范本》
国际航空运输协会《危险品规则》
国际海事组织《国际海运危险货物规则》
美国运输部，《联邦法规》，第 49 篇，运输，PT.100-185

**International Regulation:**

GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS)
Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations
IATA Dangerous Goods Regulations（DGR）
INTERNATIONAL MARITIME DANGEROUS GOODS CODE（IMDG CODE）
EU Regulation:
Regulation (EU) 2020/878: Revised Requirements for EU Safety Data Sheets
EU regulation (EC) 1272/2008 on "Classification, Labeling and Packaging of Substances and Mixtures" (CLP),Registration, Evaluation and Authorization of Chemicals（REACH）.The label, disposal and recycling of the battery shall meet the

requirements of EU Directive (EU)2023/1542 and 2013/56/EU.
Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)
US Regulation:American National Standard for Hazardous Workplace Chemicals - Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation
US DOT, Code of Federal Regulations, Title 49, Transportation, PT. 100-185
**ICAO TI:**
1.除非依据《技术细则》的相关要求取得豁免，单独包装的锂离子电池(芯)(UN 3480，PI 965)和锂金属电池(芯)(UN3090，PI968)货物禁止使用客机运输。
2.除非依据《技术细则》的相关要求取得特别批准，按照包装说明 965 要求运输的锂离子电池(芯)货物，交运时锂离子电池(芯)的荷电状态不得超过其额定容量的 30%。
1.Unless be exempted according to ICAO TI, the lithium ion cell/batteries (UN 3480, PI 965) and lithiummetal cell/batteries (UN 3090,PI 968)are forbidden for carriage on passenger aircraft.
2.Unless be approved according to ICAO TI, lithium ion cells/batteries (UN 3480, PI 965) must be offered for transport at a state of charge (SoC)not exceeding 30% of their rated design capacity.

## 第十六部分 其他信息
## SECTION16 OTHER INFORMATION

**编制日期 Preparation Date:**2026 年 1 月 1 日
**编制部门 Preparation Department:**Quality Department
**编制人 Prepared by：**莫利纯 Mo Lichun
**电话(传真)Tel(Fax):**+86-0756-6333555
**修改信息 Revision:**第 0 次修订
**其他信息：**本文件报告仅针对此款电池现有数据进行填写，用户应仔细阅读文件内容，并按照正确的方法使用电池，如因电池使用不当造成的损害或损失，珠海鹏辉能源有限公司不承担任何责任。文件的使用者必须对内容的正确性与完整性做出独立判断，根据实际情况决定其适用性，并对使用后果承担相关法律责任。
**Other Information:**
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**缩略语和首字母缩写:**
CAS:美国化学文摘；EC:欧盟委员；ACGIH:美国政府工业卫生学家委员；会 PC-TWA:时间加权平均容许浓度；TLV-TWA:时间加权平均阈限值；RID:国际铁路运输危险货物规则；ADR:关于国际公路运输危险货物的欧洲协议；IATA DGR:国际航空运输协会 危险货物规则；IMO IMDG CODE:国际海事组织 国际海运危险货物规则；EU:欧洲联盟；ICAO TI:国际民用航空组织 危险物品安全航空运输技术细则；PI:包装说明本。
**Abbreviations and Acronyms :**

CAS: Chemical Abstracts Service ;EC: European Commission ;ACGIH: American Conference of Governmental Industrial Hygienists;PC-TWA: Permissible concentration-time weighted average ;TLV-TWA: Time weighted average threshold limit RID: Regulations concerning the International Carriage of Dangerous Goods by Rail ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road IATA DGR： International Air Transport Association Dangerous Goods Regulations;IMO IMDG CODE; International Maritime Organization International Maritime Code for Dangerous Goods;EU: European Union ;ICAO TI: International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods by Air;Pl:Packaging Instruction.