



华富（江苏）锂电新技术有限公司

Huafu(JiangSu) Lithium Battery High Technology Co.,Ltd

锂离子电池产品安全技术说明书(MSDS)

Material Safety Data Sheet for Li-ion Battery (MSDS)

第一部分：产品名称及企业标识

Part I: Product Name and Corporate Identify

产品信息：

Product information:

名称：聚合物锂离子电池

Name: Polymer lithium ion battery

型号/Model: 8-LFP-20-EV-NOB 24V 20Ah 480Wh

企业信息：

Enterprise information:

厂家：华富（江苏）锂电新技术有限公司

Manufacturer: Huafu(JiangSu) Lithium Battery High Technology Co.,Ltd.

地址：江苏省高邮经济开发区高邮市电池工业园

Address: Battery Industrial Park, Gaoyou Economic Development Zone, Yangzhou, Jiangsu, China.

电话/Tel: 0514-84540100

传真/Fax: 0514-85081972

邮箱/E-mail: huafu@cnhuafu.com

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第二部分：成分/组成信息

Part II: Composition Information

组分 Components	分子式 Molecular formula	CAS 号 CAS No.	重量含量/% Wt/%
磷酸亚铁锂/ Lithium iron phosphate	LiFePO ₄	349632-76-4	34
碳（石墨，乙炔黑）/ Carbon(graphite, acetylene black)	C	7440-44-0	16
铝/Aluminum	Al	7429-90-5	4
铜/Copper	Cu	7440-50-8	7



六氟磷酸锂/Lithium hexafluorophosphate	LiPF ₆	21324-40-3	1
有机碳酸酯/Organic carbonate	——	——	9
塑胶/Plastic	——	——	7
镍, 聚偏氟乙烯等/ Nickel, polyvinylidene fluoride, etc	——	——	2
镍钴锰/Nickel Cobalt Manganese	Ni/Co/Mn	——	未检出/Not Detected
铅/Lead	Pb	7439-92-1	未检出/Not Detected
镉/Cadmium	Cd	7440-43-9	未检出/Not Detected
汞/Mercury	Hg	7439-97-6	未检出/Not Detected

第三部分：危险性概述

Part III: Hazards Overview

9类，杂质。通过联合国《关于危险货物运输的建议书 试验和标准手册》UN38.3 试验。

正常情况下，按照生产商提供的使用说明来使用，是不会有危险的。在滥用的情况下，可能会有内部物质泄漏、发热、着火、外壳开裂等情况发生造成人身伤害和财产损失。滥用情况包括但不限于以下情况：长时间充电、短路、放入火中、用硬物敲击、用尖锐的物体刺穿、挤压、折断等。

Class 9, miscellaneous. The battery has passed the test items of UN Model Regulations, Manual of Test and Criteria Section UN 38.3.

Generally, there will be no danger to use the products according to the instructions provided by the manufacturer. In case of abuse, internal material leakage, heat generation, ignition, shell cracking and other issues may occur, causing personal injury and property damage. Abuse, includes but is not limited to, long time charging, short circuit, putting in a fire, knocking with hard objects, piercing with sharp objects, squeezing, breaking off.

第四部分：急救措施

Part IV: First Aid Measures

在正常的情况下，眼睛接触、皮肤接触是不会有危害的。

Under normal conditions, it is not harmful during eye and skin contact.

如果电芯着火或开裂，会泄漏内部有害物质和生成有害物质，如有接触，采取以下措施：

It may leak hazardous substance inside and generate hazardous substance if the cell burns or cracks. The following measures shall be taken if there is any contact with the hazardous substance:



眼睛接触后，立即用清水冲洗 15 分钟，就医；

In case of eye contact, immediately rinse with clean water for 15 minutes and seek medical advice;

皮肤接触后，用清水冲洗 15 分钟，如果情况严重，就医；

In case of skin contact, rinse with clean water for 15 minutes. Seek medical advice if the situation is serious;

吸入后，立即转移到有新鲜空气的地方，就医，同时对受污染区域通风；

In case of inhalation, immediately move the sick person to fresh air and seek medical advice, and ventilate the contaminated area;

食入后，立即用清水漱口，在专业人士的指导下催吐，就医。

In case of ingestion, immediately rinse the mouth with clean water, induce vomiting under the guidance of professionals and seek medical advance.

第五部分：消防措施

Part V: Firefighting Measures

可用干粉灭火器、砂子、土等灭火。燃烧产物和内部物质与空气和水接触的生成物包括：CO，CO₂，HF，锂氧化物烟气等。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。

Dry powder fire extinguisher, sand, soil, etc. can be used for extinguishing. Products of combustion and objects generated by internal matter contacting with air and water include CO, CO₂, HF, lithium oxide fumes, etc. Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

第六部分：泄漏应急处理

Part VI: Accidental Release Measures

若电池内的物质泄漏，用洁净铲子收集于干燥、洁净、有盖的容器中待处理。处理人员应穿合适的防护服。

If batteries show signs of leaking, avoid skin or eye contact with the material leaking from the battery. Use chemical resistant rubber gloves and non-flammable absorbent materials for clean up. Mix with inert material(e.g. dry sand, vermiculite) and transfer to sealed container for disposal.

第七部分：操作处置与储存

Part VII: Handling and Storage

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，避免阳光直射。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、腐蚀品分开存放。

Keep away ignition sources, heat and flame. Such batteries must be packed in inner packages in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits. Avoid mechanical or electrical abuse. More than a momentary short circuit will generally reduce the battery service life. Avoid reversing battery polarity within the battery assembly. In case of a battery unintentionally be crushed, rubber gloves must be used to handle all battery components. Avoid contact with eyes, skin. Avoid inhalation. No smoking at working site. Materials to Avoid: Strong oxidizing agents, Corrosives.

储存于阴凉、通风的仓库内。远离火种、热源，避免阳光直射。应与强氧化剂、腐蚀品分开存放。储存区配备相应品种和数量消防器材、泄漏应急处理设备和合适的收容材料。

Store in a cool, well-ventilated area, Keep away from ignition sources, heat and flame. Such batteries must be packed in inner packages in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits. Materials to Avoid :Strong oxidizing agents, Corrosives.

第八部分：接触控制与个体防护

Part VIII: Exposure Controls and Personal Protection

正常的情况下，个人不需要防护。在工程方面，需要有抽气通风设备。

In general, no personal protection is needed. While air exhaust and ventilation equipment are needed in engineering.

如有着火和内部物质泄漏，在处理时需要戴防毒面具、护目镜、耐化学腐蚀的手套和穿防护服装。

In case of a fire or internal material leakage, gas mask, goggle, chemically resistant gloves and protective clothing shall be worn during handling.

第九部分：理化特性

Part IX: Physical and Chemical Properties

电芯不是一种单一化学品，没有特定的理化性能。如：熔沸点等。

Cell is not a single chemical, thus it has no specific physical and chemical properties such as melting point and boiling point.

第十部分：稳定性和反应性

Part X: Stability and Reactivity

在正常的情况下，电芯是安全的。

The cell is safe normally.

电芯着火或者内部物质泄漏后，可能出现的物质有：有机碳酸酯，氟化氢，CO，CO₂，锂氧化物烟气等。

Organic carbonate, hydrogen fluoride, CO, CO₂, lithium oxide fumes and the like may occur in case of the ignition of the cell or leakage of internal materials.

第十一部分：毒理学资料

Part XI: Toxicological Information

正常使用时，电芯没有毒性。

In normal use, the cell is not toxic.

电芯着火或者内部物质泄漏后，燃烧产物、电芯内部各组分及其与水份接触后的分解产物对人体皮肤、眼睛和呼吸系统有一定的刺激性和毒性。此处列举部分物质的毒理学数据。

If there is an ignition of the cell or leakage of internal materials, the combustion products, components inside the cell and their decomposition products after contacting with water have certain irritation and toxicity to human skin, eyes and respiratory system. Toxicological information for some materials are listed here.

氟化氢：有较大的毒性。吸入和食入可致命。可通过皮肤吸收。可诱导突变。LCLo: 50 ppm/30m (人), LC50: 1276 ppm/1h (小白鼠)。

Hydrogen fluoride: It has great toxicity. Inhalation and ingestion can be fatal. It can be absorbed by the skin and induce mutation. LCLo: 50 ppm/30m (human), LC50: 1276 ppm/1h (rat).

碳和石墨：皮肤接触有刺激性，吸入和食入有轻微的危害，对上呼吸道和心血管系统有慢性损害。

Carbon and graphite: They are irritating for skin contact, and have minor hazards for inhalation and ingestion, and chronic damage to the upper respiratory tract and cardiovascular system.

铜：粉尘对呼吸系统有刺激。LD50: 3.5 mg/kg (小白鼠)。

Copper: The dust irritates the respiratory system. LD50: 3.5 mg/kg (rat).

铝：没有毒性。

Aluminum: No toxicity.

铁：粉尘对呼吸系统有危害。LD50: 30mg/kg (小白鼠)。

Iron: The dust is harmful to the respiratory system. LD50: 30mg/kg (rat).



第十二部分：生态学资料

Part XII: Ecological Information

正常使用时，电芯不会有生态和环境方面的影响。

The cell has no ecological and environmental impact under normal use.

第十三部分：废弃处置

Part XIII: Disposal Considerations

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。

Lithium batteries are best disposed of as a non-hazardous waste when fully or mostly discharged. Contact a licensed professional waste disposal service to dispose of large quantities materials.

废弃电芯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芯的垃圾桶或当作特殊垃圾处理。废弃电芯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。电芯的包装纸盒和塑料盒可作为普通垃圾处理。

The discarded cells shall not be directly treated as general garbage, and shall be packed and sealed in plastic bags and put into the garbage bin for cell recycling or treated as special garbage. It shall not be thrown into fire and placed in high temperature environment, and shall not be disassembled, pierced, squeezed, etc. The packaging cartons and plastic boxes of the cell can be treated as general garbage.

第十四部分：运输信息

Part XIV: Transport Information

锂电池的国际运输有以下组织制定了规则：国际海事组织 IMO《国际海运危险货物规则》，国际航空运输协会 IATA《危险品规则》，国际民航组织 ICAO《危险物品航空安全运输技术导则》。以上规则均以联合国《关于危险货物运输的建议书 试验和标准手册》作为基础，锂电池应通过联合国《关于危险货物运输的建议书 试验和标准手册》UN38.3 试验。

Rules for the international transport of lithium batteries have been formulated by *International Maritime Dangerous Goods Code* of IMO, *Dangerous Goods Regulations* of IATA, and *Technical Instructions for the Safe Transport of Dangerous Goods by Air* of ICAO. The above rules are all based on the *Recommendations on the Transport of Dangerous Goods – Manual of Tests and Criteria*. The lithium batteries has passed the test items of UN Model Regulations, Manual of Test and Criteria Section UN38.3.

运输标签：锂电池标签，第九类危险品标签，仅限货机标签

Label for conveyance: Lithium Battery Label, Class 9 Label, Cargo Aircraft Only



UN 编号/UN Number:3480, 3481, 3171

包装等级：不适用

Packaging Group: N/A

海洋污染物：无

Marine pollutant: NO

正确运输名称：锂离子电池（包括聚合物锂离子电池）

Proper Shipping Name: Lithium ion Battery(including Lithium ion Polymer Battery)

锂离子电池已通过联合国《试验和标准手册》第IIIb 部分 38.3 小节相应测试要求，锂离子电池瓦时额定值不超过 100Wh 或者锂离子电芯瓦时额定值不超过 20Wh，根据第 59 版 DGR 手册 965 第 II 节/第 IB 节或 966~967 第 II j 节的指令可以运输；货物运输应遵守 IMDG CODE (Amdt: 38-16) 2016 版特殊规定 188 的要求，该货物属于非限制货物。

Lithium-ion batteries have passed the corresponding test requirements in Section 38.3, Part IIIb of the United Nations "Manual of Tests and Standards". The watt-hour rating of lithium-ion batteries does not exceed 100Wh or the watt-hour rating of lithium-ion batteries does not exceed 20Wh. According to the 59th edition of the DGR manual 965 Section II/Section IB or 966~967 Section IIj instructions can be transported; cargo transportation should comply with the requirements of IMDG CODE (Amdt: 38-16) 2016 Edition Special Provision 188, and the goods are non-restricted goods.

第十五部分：法规信息

Part XV: Regulatory 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



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Toxic Substance Control Act(TSCA)

消费产品安全法

Consumer Product Safety Act(SPSA)

联邦环境污染控制法

Federal Environmental Pollution Control Act(FEPCA)

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)

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

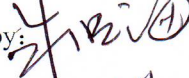
第十六部分：其它信息

Part XVI: Other Information

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