



Shanghai PYTES Energy Co., LTD.

Add.	中国上海奉贤区路金钱公路 3492 号 No.3492 Jinqian Road, Fengxian District, Shanghai, China	P.C	2023122501
TEL	021-57475847	FAX	021-57474370

材料安全说明书(MSDS)

MATERIAL SAFETY DATA SHEET(MSDS)

Issue date: 2023-12-25 Rev: A.0

锂离子充电电池

LITHIUM-ION RECHARGEABLE BATTERY

第一节产品及公司标识

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

IDENTITY	产品分类 Product Category	:	可充电锂离子电池组 Rechargeable Li-ion Battery Pack
	型号名称 Model Name	:	V5° V5°
	公司 Company	:	上海派智能源股份有限公司 Shanghai PYTES Energy Co., LTD.
	地址 Address	:	中国上海奉贤区路金钱公路 3492 号 No.3492,Jinqian Road, Feng xian District, Shanghai, China
	邮箱 Email	:	zhiquan_liu@pytesgroup.com
	传真 Fax	:	0086-21-57474370-888
	电话 Phone Number	:	0086-15618123638
	紧急电话 Emergency Phone	:	0086-021-57475847

第二节危害识别

SECTION 2 HAZARDS IDENTIFICATION

危害识别:

第 9 类, 杂项。电池已通过《联合国型号规范》、《测试手册和标准》UN 38.3 节的测试项目。

紧急情况概述:

注意: 避免接触和吸入电池内的电解液。

Hazards Identification:

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

Emergency Overview:

Caution: Avoid contact and inhalation the electrolyte contained inside the battery.

第三节关于成分的信息

SECTION 3 INFORMATION ON INGREDIENTS

电池电芯:

Battery Cell :

危险成分:

Hazardous ingredients:

常见化学名称 Common Chemical	化学式 Chemical Formula	浓度 (%) Concentration(%)	CAS 编码 CAS No.	EC 编码 EC No.
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Name				
磷酸铁锂 Lithium Iron Phosphate	LiFePO ₅	38.3%	15365-14-7	604-917-2
石墨 Graphite	C	19.4%	7782-42-5	231-955-3

Safety Data Sheets (SDSs)

隔膜 Separator	(C ₂ H ₄) _n	2.2%	9002-88-4	618-339-3
铜箔 Copper Foil	Cu	6.7%	7440-50-8	231-159-6
铝合金 Aluminum Alloy	Al	13.3%	7429-90-5	231-072-3
丁苯橡胶 Styrene-butadiene rubber (SBR)	(C ₈ H ₈ .C ₄ H ₆) _n	0.8%	9003-55-8	618-370-2
导电炭黑 Carbon black	C	0.4%	1333-86-4	215-609-9
聚偏氟乙烯 Poly (vinylidene fluoride) (PVDF)	C ₂ H ₂ F ₂	0.8%	24937-79-9	607-458-6
六氟磷酸锂 Lithium hexafluorophosphate	LiPF ₆	2.3%	21324-40-3	244-334-7
碳酸乙烯酯 Ethylene carbonate(EC)	C ₃ H ₄ O ₃	5.6%	96-49-1	202-510-0
碳酸甲乙酯 Ethyl methyl carbonate(EMC)	C ₄ H ₈ O ₃	4.6%	623-53-0	613-014-2
碳酸二甲酯 Dimethyl carbonate(DMC)	C ₃ H ₆ O ₃	5.6%	616-38-6	210-478-4
铅 Lead	Pb	Not Detected	7439-92-1	231-100-4
镉 Cadmium	Cd	Not Detected	7440-43-9	231-152-8
汞 Mercury	Hg	Not Detected	7439-97-6	231-106-7

电路模块:

Circuit Module:

危险成分 HAZARDOUS INGREDIENTS	%	CAS number
铅 Lead	<0.1	7439-92-1
汞 Mercury	Not Detected	7439-97-6
铬 Chromium	Not Detected	7440-47-3

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镉 Cadmium	Not Detected	7440-43-9
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塑料零件:

Plastic Parts:

危险成分 HAZARDOUS INGREDIENTS	%	CAS number
铅 Lead	<0.1	7439-92-1
镍 Nickel	<0.01	7440-02-0
氯氟烃 CFCs	Not Detected	75-69-4
多克隆联苯 Polychlorinated Biphenyls	Not Detected	1336-36-3

第四节急救措施

SECTION 4 FIRST-AID MEASURES

皮肤暴露:

如果打开的电池内部电池材料与皮肤接触，立即用大量水冲洗。

眼睛暴露:

如果电池电芯的内部材料与眼睛接触，请用大量的水冲洗至少 15 分钟。用手指分开眼睑，确保足够的冲洗。打电话给医生。

吸入暴露:

如吸入电池电芯内部材料，应立即吸入新鲜空气并就医。

口腔暴露:

如果吞下了电池电芯的内部材料，不要催吐。立即就医。

Skin Exposure:

If the internal battery materials of an opened battery cell come into contact with the skin, immediately flush with plenty of water.

Eye Exposure:

In case of the internal battery materials in contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Inhalation Exposure:

If inhaled the internal materials of battery, remove immediately to fresh air and seek medical attention.

Oral Exposure:

If swallowed the internal materials of battery, do not induce vomiting. Seek immediate medical attention.

第五节消防措施

SECTION 5 FIRE FIGHTING MEASURE

灭火介质:

适用：干粉、砂土、二氧化碳或适当的泡沫。

消防:

防护装备：穿戴独立式呼吸器和防护服，防止接触皮肤和眼睛。

Extinguishing Media:

Suitable: Dry chemical, Sandy soil, Carbon dioxide or appropriate foam.

Firefighting:

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

第六节意外泄露应急措施

SECTION 6 ACCIDENTAL RELEASE MEASURES

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执行个人防护措施的程序:

如果电池有泄漏的迹象, 请避免皮肤或眼睛接触从电池泄漏的材料。使用耐化学性橡胶手套和不易燃的吸收性材料进行清理。与惰性材料(如干砂、蛭石)混合, 然后转移到密封容器中处理。

Procedure of Personal Precaution:

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.

第七节搬运和储存

SECTION 7 HANDLING AND STORAGE

处理:

远离火源、热源和火焰。这类电池必须进行内包装, 以有效地防止短路, 并防止可能导致短路的运动。避免机械或电气方面的滥用。超过一个短暂的短路通常会降低电池的使用寿命。避免在电池组件内反转电池的极性。如果一个电池在无意中被压碎, 必须使用橡胶手套来处理所有的电池组件。避免接触眼睛和皮肤。避免吸入。在工作现场禁止吸烟。应避免的材料: 强氧化剂、腐蚀剂。

存储:

储存在一个凉爽、通风良好的区域。远离火源、热源和火焰。这类电池必须进行内包装, 以有效地防止短路, 并防止可能导致短路的运动。应避免的材料: 强氧化剂、腐蚀剂。

Handling:

Keep away from ignition sources, heat and flam. 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.

Storage:

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.

第八节接触控制/个人防护

SECTION 8 EXPOSURE CONTROL/PPE

工程控制:

如果有可能, 可以使用通风设备。安全的淋浴器和眼部浴缸。

个人防护设备:

呼吸系统: 在正常使用的条件下, 不需要使用呼吸系统。

眼睛: 在正常使用的条件下是不需要的。

服装: 穿适当的防护服。

手: 安全手套。

其他保护: 在工作场所禁止吸烟、饮酒、进食。处理后彻底清洗。

Engineering Controls:

Use ventilation equipment if available. Safety shower and eye bath.

Personal Protective Equipment:

Respiratory System: Not necessary under conditions of normal use.

Eyes: Not necessary under conditions of normal use.

Clothing: Wear appropriate protective clothing.

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Hand: Safety gloves.
Other Protect:
No smoking, drinking and eating at working site. Wash thoroughly after handling.

第九节物理和化学
SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

外观:
银色喷涂钢板外壳
气味:
无气味的
熔点/°C:
>300°C
溶解度:
部分溶于水

Appearance:
Black sprayed steel plate shell
Odor:
Odorless
Melting Point/°C:
>300°C
Solubility:
Partial soluble in water

第十节稳定性和反应性
SECTION 10 STABILITY AND REACTIVITY

稳定性:
在正常温度和压力下保持稳定。

要避免的条件:
避免暴露在高温和明火中。避免机械或电气方面的滥用。防止短路。防止可能导致短路的运动。

避免使用的材料:
强氧化剂，腐蚀剂

危险聚合:
不会发生。

危险分解产品:
金属氧化物，CO，CO₂。

Stability:
Stable under normal temperatures and pressures.

Conditions to Avoid:
Avoid exposure to heat and open flame. Avoid mechanical or electrical abuse. Prevent short circuits. Prevent movement which could lead to short circuits.

Materials to Avoid:
Strong oxidizing agents, Corrosives

Hazardous Polymerization:
Will not occur.

Hazardous Decomposition Products:
Metal oxides, CO, CO₂

第十一节毒理学信息
SECTION 11 TOXICOLOGICAL INFORMATION

毒性数据:

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不能提供。

刺激数据:

内部的电池材料可能会引起对眼睛的刺激和皮肤

Toxicity Data:

Not available.

Irritation Data:

The internal battery materials may cause irritation to eyes and skin

第十二节生态信息

SECTION 12 ECOLOGICAL INFORMATION

没有可用数据。

No data available.

第十三节处置注意事项

SECTION 13 DISPOSAL CONSIDERATIONS

适当的物质处置方法:

锂电池在完全或大部分放电时，最好作为无害废物处置。联系有执照的专业废物处理服务机构处理大量材料。

Appropriate Method of Disposal of Substance:

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.

第十四节运输信息

SECTION 14 TRANSPORT INFORMATION

国际航空运输协会

正确的运输名称：锂离子电池。

联合国编号： UN 3480

危险等级： 9

国际海事组织:

正确的运输名称：锂离子电池。

联合国编号： UN 3480

危险等级： 9 EmS

EmS 编号： F-A、S-I

货物应遵守IATA第61版DGR手册包装说明965第IA节规定（2022版）和特殊规定188海运危险货物规则（Amdt.41-22）版，包括通过UN38.3测试手册要求。

IATA:

- Proper Shipping Name: Lithium ion batteries.
- UN Number : UN 3480
- Hazard class : 9

IMO:

- Proper Shipping Name: Lithium ion batteries.

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- UN Number : UN 3480
- Hazard class : 9
- EmS No: F-A, S-I

The goods shall be complied with the requirements of Section IA of Packing Instructions 965 of 61th DGR Manual of IATA 2022 edition or special provision 188 of IMDG CODE Amdt.41-22 Edition, including the passing of the UN38.3 test.

第十五节 监管信息

SECTION 15 REGULATORY INFORMATION

国际民间航空组织

除非根据 ICAO TI 的规定予以豁免，否则客机禁止使用锂离子电池/电池（UN3840，pi 965）和锂金属离子电池/电池（UN3090，PI 968）。

除非得到 ICAO TI 的批准，否则锂离子电池/电池（UN3840，pi 965）必须在充电状态（SOC）不超过其额定设计容量的 30% 的情况下进行运输。

托运人不得在任何一次托运中超过一个包裹，根据 PI 963 第二节准备的运输包装。根据 PI 965 和 PI 968 第二节准备的行李中不得超过一个包裹。

根据 PI 965 和 PI 968 第 II 节准备的包装必须与其他货物分开提供给操作员，并且在提供给操作员之前不得装入装置负载装置（ULD）中。

ICAO:

- Unless be exempted according to ICAO TI, the lithium ion cell/batteries (UN3840, pi 965) and lithium metal cell/batteries (UN3090, PI 968) are forbidden for carriage on passenger aircraft .
- Unless be approved according to ICAO TI, lithium ion cells/ batteries (UN3840, pi 965) must be offered for transport at a state of charge (SOC) not exceeding 30% of their rated design capacity .
- A shipper is not permitted to offer for transport more than one package prepared according to Section II of PI 963 in any single consignment. Not more than one package prepared in accordance with Section II of PI 965 and PI 968 may be placed into an over pack.
- Packages prepared according to Section II of PI 965 and PI 968 must be offered to the operator separately from other cargo and must not be loaded into a unit load device (ULD) before being offered to the operator.

第十六节 其他信息

SECTION 16 OTHER INFORMATION

日期:

2023-12-25

部门:

上海派智能能源股份有限公司
电话: 0086-021-57475847

修订版:

A.0

其他信息:

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Date:

2023-12-25



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Other Information:

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