



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	2023020301
TEL	021-57475847	FAX	021-57474370

材料安全说明书(SDSs)

MATERIAL SAFETY DATA SHEET(SDSs)

Issue date: 2023-02-03 Rev: A.0
MSDS REF. NO.: E-BOX 48100R

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	:	E-BOX 48100R
	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	:	ess_support@pytesgroup.com
	传真 Fax	:	021-57474370
	电话 Emergency Phone	:	+86-15852799795
	紧急电话 Emergency Phone	:	+86-021-57475847
	澳大利亚进口商名称 Australian importer name	:	K2 Battery Pty Ltd
	澳大利亚进口商地址 Australian importer address	:	12A Redland Drive, Mitcham VIC 3132 Australia
	澳大利亚进口商电话 Australian importer Telephone	:	+61 431 440 390
	澳大利亚进口商电子邮件 Australian importer E-mail	:	gary@k2battery.com.au



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第二节危害识别
SECTION 2 HAZARDS IDENTIFICATION

***根据 GHS (第九修订版)**

***According to GHS (Ninth Revised Edition)**

危害识别:

根据 GHS 系统 (第 9 修订版), 未被归类为危险化学品。

Hazards Identification:

According to GHS system (9th revised edition), not classified as a hazardous chemical.

GHS 标签元素:

GHS Label elements:

信号词: Signal word:	不适用 Not applicable.
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危害陈述:

Hazard statements:

危害陈述: Hazard statements:	不适用 Not applicable
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预防性声明:

Precautionary statements:

预防 Prevention	不适用 Not applicable
回复 Response	不适用 Not applicable
储存 Storage	不适用 Not applicable
放射性物质 Disposal	不适用 Not applicable

紧急情况概述:

注意: 避免接触和吸入电池内的电解液。

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 Name	化学式 Chemical Formula	浓度 (%) Concentration(%)	CAS 编码 CAS No.	EC 编码 EC No.
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

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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
镉 Cadmium	Not Detected	7440-43-9

塑料零件:
Plastic Parts:

危险成分 HAZARDOUS INGREDIENTS	%	CAS number
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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。

暴露引起的症状:

在反复或长期的职业接触后，在人体中可能会发生物质积累，并可能引起一些关注。

需要立即的治疗和特殊治疗:

- 1.治疗症状。
- 2.症状可能会延迟。

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.

Symptoms caused by exposure:

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

Indication of any immediate medical attention and special treatment needed:

- 1.Treat symptomatically.
- 2.Symptoms may be delayed.

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。

不适用：对可使用的灭火器的类型没有任何限制。

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。

由该物质或混合物产生的特定危害:

在发生火灾时可能产生的有害燃烧气体或蒸汽。当加热或发生火灾时可爆炸膨胀或分解。

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消防人员的防护设备和注意事项:

在任何火灾中，穿戴自给式呼吸器压力需求，MSHA/NIOSH（经批准或等效）和全套防护装备。例如：佩戴自给式呼吸保护装置。穿戴合适的防护服和眼睛/面部防护装置。

Extinguishing Media:

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

Unsuitable: There is no restriction on the type of extinguisher which may be used.

Firefighting:

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

Specific hazards arising from the substance or mixture:

Development of hazardous combustion gases or vapor possible in the event of fire. May expansion or decompose explosively when heated or involved in fire.

Protective Equipment and Precautions for Firefighters:

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. For example: Wear self-contained respiratory protective device. Wear suitable protective clothing and eye/face protection.

第六节意外泄露应急措施

SECTION 6 ACCIDENTAL RELEASE MEASURES

个人预防措施、防护设备和应急程序:

避免接触眼睛。有关个人防护设备，请参阅第 8 节。确保通风良好。清除所有火源。疏散人员到安全区域。

环境预防措施:

环境预防措施指第 7 节和第 8 节中列出的保护措施。用液体粘合剂（沙子、硅藻土、酸性粘合剂、通用粘合剂、锯末）吸收。按照第 13 项将受污染的材料作为废物处理。

控制和清理的方法和材料:

控制的方法：在安全的情况下，防止进一步泄漏或溢出。清理的方法：使用个人防护设备。用沙子、泥土或其他不燃吸收性材料拦住或覆盖液体溢出物。并转移到贴有适当标签的容器中。彻底清洁污染表面。

Personal precautions, protective equipment and emergency procedures:

Personal Precautions Avoid contact with eyes.Refer to section 8 for personal protective equipment. Ensure adequate ventilation. Remove allsources of ignition.Evacuate personnel to safe areas.

Environmental precautions:

Environmental PrecautionsRefer to protective measures listed in Sections 7 and 8.Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).Dispose contaminated material as waste according to item 13.

Methods and material for containment and cleaning up:

Methods for Containment Prevent further leakage or spillage if safe to do so.Methods for Cleaning up Use personal protective equipment. Dam up. Cover liquid spill with sand, earth or other Non-combustible absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly.

第七节搬运和储存

SECTION 7 HANDLING AND STORAGE

安全搬运注意事项:

远离火源、热源和火焰。此类电池必须以有效防止短路和防止可能导致短路的移动的方式包装在内包装中。避免机械或电气滥用。超过瞬间短路通常会缩短蓄电池的使用寿命。避免在电池组件内颠倒电池极性。如果电池无意中被压碎，必须使用橡胶手套处理所有电池组件。避免接触眼睛、皮肤。避免吸入。工作场所禁止吸烟。避免接触的材料：强氧化剂、腐蚀剂。

安全储存条件，包括任何不相容性:



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存放在阴凉、通风良好的地方。远离火源、热源和火焰。此类电池必须以有效防止短路和防止可能导致短路的移动的方式包装在内包装中。

避免接触的材料：强氧化剂、腐蚀剂。

Precautions for safe handling:

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. 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.

Conditions for safe storage, including any incompatibilities:

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.

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

物理状态 Physical State	形状：棱柱形 Foem: Prismatic
	颜色：蓝色 Color: Blue
	气味：无 Odour: Odourless
	气味阈值：无可用信息 Odor Threshold: No information available
条件变化： Change in condition::	

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pH 值, 指示浓度 pH, with indication of the concentration	未确定 Not determined.
熔点/冰点 Melting point/freezing point	未确定 Not determined.
初始沸点和沸腾范围: Initial boiling point and Boiling range:	未确定 Not determined.
闪点 Flash Point	未确定 Not determined.
可燃性 (固体、气体) Flammability (solid, gas)	未确定 Not determined.
可燃性或爆炸性上限/下限 Upper/lower flammability or explosive limits	未确定 Not determined.
自燃温度 Auto-ignition temperature	产品非自燃物质。 Product is not self-igniting.
分解温度 Decomposition temperature	未确定 Not determined.
其他信息 Other Information	没有进一步的相关信息。 No further relevant information available.

第十节稳定性和反应性

SECTION 10 STABILITY AND REACTIVITY

反应性: 在建议的储存和搬运条件下稳定 (见第 7 节)。

化学稳定性: 在正常使用、储存和运输条件下稳定。

热分解/应避免的条件: 如果按照规范使用, 则不会分解。

危险反应的可能性: 正常使用下无危险。

危险聚合: 不会发生危险聚合。

避免条件: 强加热、火灾、不相容物质。

不相容物质: 强氧化剂。强酸。

有害分解产物: 碳氧化物、其他刺激性和有毒气体。

Reactivity: Stable under recommended storage and handling conditions (see section 7).

Chemical stability: Stable under normal conditions of use, storage and transport.

Thermal decomposition/conditions to be avoided: No decomposition if used according to specifications.

Possibility of Hazardous Reactions: None under normal processing.

Hazardous Polymerization: Hazardous polymerization does not occur.

Conditions to avoid: Strong heating, fire, Incompatible materials.

Incompatible materials: Strong oxidizing agents. Strong acids. Strong bases.

Hazardous Decomposition Products: Carbon oxides, other irritating and toxic gases.

第十一节毒理学信息

SECTION 11 TOXICOLOGICAL INFORMATION

急性毒性: 无可数据。

皮肤腐蚀/刺激: 无刺激作用。

严重眼睛损伤/刺激: 引起严重眼睛刺激。

呼吸道或皮肤致敏: 无已知致敏作用。

特定靶器官系统毒性: 无可数据。

注意: 电池内部材料可能对眼睛造成刺激。

Acute toxicity: No data available.



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Skin corrosion/irritation: No irritant effect.
Serious eye damage/irritation: Cause serious eye irritation.
Respiratory or skin sensitization: No sensitizing effects known.
Specific target organ system toxicity: No information available.
Note: The internal battery materials may cause irritation to eyes and skin.

第十二节生态信息
SECTION 12 ECOLOGICAL INFORMATION

毒性: 无进一步相关信息。
持久性和降解性: 无进一步的相关信息。
生物累积潜力: 无进一步相关信息。
土壤流动性: 无进一步相关信息。
PBT 和 vPvB 评估结果:
PBT: 不适用。
vPvB: 不适用。
其他不良反应: 无资料。
Toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Results of PBT and vPvB assessment:
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No information available.

第十三节处置注意事项
SECTION 13 DISPOSAL CONSIDERATIONS

处置注意事项:
废物化学品: 处置前应参照国家和地方的相关法律法规。建议使用焚烧处理方法。
受污染的包装: 容器空空时仍可能存在化学危险。远离热源和生火源。如果可能, 返回供应商进行回收。
处置建议: 参考废物化学品和污染的包装。
Disposal considerations:
Waste chemicals: Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.
Contaminated packaging: Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.
Disposal recommendations: Refer to section waste chemicals and contaminated packaging.

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

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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海运危险品货物规则（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.
- 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



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日期:

2023-02-03

部门:

上海化学工业研究所测试中心

电话（传真）：8621-52815377

修订版:

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其他信息:

上述信息被认为是正确的，但并不声称是包含全部内容，并应仅作为指南使用。我们不对该等信息作出适销性保证或任何其他明示或暗示的保证，我们也不承担因使用该等信息而产生的责任。用户应自行进行调查，以确定该信息是否适用于其特定目的。无论因使用上述信息而产生的任何第三方的任何索赔、损失或利润损失或任何特殊、间接、附带、结果性或惩戒性损害，我方不承担任何责任。

Date:

2023-02-03

Department:

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