MSDS Report

Prepared For : **申请商：**	Benergy Tech Co.,Ltd 广州倍纳极新能源科技有限公司 No.1912 Huaxin Business Building Dabei Road Panyu District Guangzhou China 广州市番禺区市桥大北路华兴商贸大厦1912
Product Name: **产品名称：**	Li-ion Battery 锂离子电池
Model 型号:	BPS-LFP7AHP
Nominal Voltage: **标称电压**	3.2V
Typical Capacity: **典型容量:**	7Ah, 32Wh
Weight 重量:	300.2g
Dimension 尺寸 :	100.5mm X 65.5mm X 15.5mm (L×W×T)
Prepared By : **编制单位：**	Shenzhen NCT Testing Technology Co., Ltd. 深圳诺测检测技术有限公司 B2A101/B2A201/B2A202, Fuqiao 6th Area, Xintian, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China 广东省深圳市宝安区福海街道新田社区富桥六区 B2A101, B2A201, B2A202
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Material Safety Data Sheet

化学品安全技术说明书

Section 1- Chemical Product & Company Identification

第一部分 化学品及企业标识

Product Name: Li-ion Battery

产品名称：锂离子电池

Manufacture: BenergyTech Co.,Ltd

制造商 广州倍纳极新能源科技有限公司

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Item Code* 项目号*: NCT230461189XM1-1

Section 2- Hazards Identification

第二部分 危险性概述

Hazard Description 危险性描述	Not dangerous with normal use. Do not dismantle, open or shred the battery ingredients contained within or their ingredients products could be harmful. 正常使用没有危险，不能拆解、打开或分解电池，里面的材料或成分是有害的。
Primary Route(s) of Exposure 接触途径	Inhalation, Ingestion, Skin contact and Eye contact. 吸入、食入、皮肤接触、眼睛接触。

Potential Health Effects **潜在健康影响**	**Inhalation:** Vapors or mists from a ruptured battery may cause respiratory irritation. **吸入：** 破裂的电池散发出来的气雾会引起呼吸道刺激。 **Ingestion:** The battery ingredients contained within or their ingredients products can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. **食入：** 电池的组成成分或原料可以导致嘴，食道和胃肠道的严重化学烧伤。 **Skin:** Skin contact with contents of an open battery can cause severe irritation or burns to the skin. **皮肤：** 皮肤接触到电池的内部化学材料可能会导致严重的刺激或烧伤皮肤。 **Eye:** Eye contact with contents of an open battery can cause severe irritation or burns to the eye. **眼睛：** 眼睛接触到电池的内部化学材料可能会导致严重的刺激或烧伤眼睛。

Section 3- Composition/Information on Ingredients

第三部分 成分/组成信息

Chemical Name **化学名称**	**Concentration or concentration ranges (%)** **浓度或浓度范围(%)**	**CAS Number** **CAS 号（化学文摘索引登记号）**
LiFePO4 磷酸铁锂	26.93	15365-14-7
C 炭黑	1.23	1333-86-4
$C_2H_2F_2$ 聚偏氟乙烯树脂	0.88	24937-79-9
C 石墨	12.85	7782-42-5
$C_8H_{16}NaO_8$ 羧甲基纤维素钠	0.18	9085-26-1
C12H14 丁苯橡胶	0.25	9003-55-8
Al 铝	21.83	7429-90-5
Cu 铜	14.44	7440-50-8
$(C_2H_4)_n$ 聚乙烯	2.28	9002-88-4
$C_9H_6O_4X_2$ 聚对苯二甲酸乙二醇酯树脂	0.21	25038-59-9
$(C_3H_6)n$ 聚丙烯	0.32	9003-07-0
Ni 镍	0.03	7440-02-0
$C_3H_4O_3$ 碳酸乙烯酯	5.23	96-49-1
$C_4H_6O_3$ 碳酸丙烯酯	13.01	108-32-7
Fe 铁	0.003	7439-89-6
$(C_2H_3Cl)n$ PVC 聚氯乙烯树脂	0.327	9002-86-2
Pb 铅	/	7439-92-1

Cd 镉	/	7440-43-9
Hg 汞	/	7439-97-6

Note: CAS number is Chemical Abstract Service Registry Number.

注意：CAS 号是化学文摘服务注册号。

N/A=Not apply.

N/A =不适用。

Section 4- First Aid Measures

第四部分 急救措施

Inhalation **吸入**	Remove source of contamination or move victim to fresh air. Obtain medical advice. 移除污染源或者将受害者移至新鲜空气处。寻求医生建议。
Ingestion **食入**	Please rinse mouth thoroughly with water. Induce vomiting under the guidance of professional personage. Please seek medical treatment in time. 立即用清水漱口，在专业人士的指导下催吐，速就医。
Skin contact **皮肤接触**	Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid. 脱下已污染衣服，用大量的水冲洗至少 15 分钟，速就医。
Eye contact **眼睛接触**	Irrigate with flowing water for 15 minutes. If irritation persists, consult a physician. 用流动水冲洗 15 分钟，如刺激持续发生，请求助于医生。

Section 5- Fire Fighting Measures

第五部分 消防措施

Characteristics of Hazard **危险特性**	Toxic fumes, gases or vapors may evolve on burning. 火灾时可释放有害浓烟、气体或者蒸汽。
Hazardous Combustion Products **燃烧产生的危险物品**	Carbon monoxide, carbon dioxide, lithium oxide fumes and so on. 一氧化碳，二氧化碳，锂氧化物烟气等。
Fire-extinguishing Methods and Extinguishing Media **灭火方法及灭火剂**	Please use water, dry sand and other proper fire extinguishing media. 请使用水，干燥沙等合适的灭火介质。
Attention in	The firemen should put on antigas masks and full fire-fighting suits.

Fire-extinguishing **灭火注意事项**	消防人员须佩戴防毒面具、穿全身消防服。

Section 6- Accidental Release Measures

第六部分 泄露应急处理

Personal Precautions, protective equipment, and emergency procedures **个人预防措施、防护装备和应急程序**	Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8. 限制区域，直到完成清理工作。请勿触摸泄漏的材料。穿戴适当的个人防护设备，如第 8 部分所示。
Environmental Precautions **环境保护措施**	Prevent material from contaminating soil and from entering sewers or waterways. 防止物质污染土壤和进入下水道或水道。
Methods and materials for Containment **方法和材料控制**	Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately. 出于安全，阻止泄漏，可以用干砂或沙土来遏制液体泄露，立即清理泄漏。
Methods and materials for cleaning up **清理的方法和材料**	Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal. 用惰性吸收剂(干砂或沙土)吸收溢出的材料。污染物转移到可吸收废物的容器。收集所有受污染的吸收剂和根据第 13 部分的指令处置。用洗涤剂和水清洁污染区域,收集所有受污染的洗涤水进行适当处置。

Section 7- Handling and Storage

第七部分 操作处置与储存

Handling **操作**	Don't handing the batteries in manner that allows terminals to short circuit. Do not open, disassemble, crush or burn battery. 不要以让接头短路的方式对电池进行操作。不要打开，分解，挤压或燃烧电池。
Storage **储存**	If the battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the battery periodically. 如果电池长期存放超过 3 个月，建议定期对电池充电。 Long period storage: 23±5℃, 65±20%R.H 长期存储: 23±5℃，相对湿度 65±20%

	Do not storage the battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects. 不要将电池随意丢在盒子或抽屉里，以免电池之间或电池与其他金属物质发生短路。 Keep out of reach of children. 储存在小孩接触不到的地方。 Do not expose the battery to heat or fire. Avoid storage in direct sunlight. 不要将电池暴露在火源和热源附近，避免在阳光直射下存储。 Do not store together with oxidizing and acidic materials. 不要与氧化和酸性物质存储在一起。

Section 8 - Exposure Controls/Personal Protection

第八部分 接触控制和个体防护

Engineering Controls **工程控制**	No engineering controls are required for handling batteries that have not been damaged. Personal protective equipments for damaged batteries should include chemical resistant gloves and safety glasses. 操作未破损的电池，没有工程控制要求。对于破损的电池，个人防护用品应包括化学品防护手套和安全眼镜。
Personal Protective Equipment **个人防护设备**	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. Not necessary under conditions of normal use. 呼吸保护：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。正常使用条件下不必考虑。 Protective Gloves: Not necessary under conditions of normal use. 防护手套：正常使用条件下不必考虑。 Other Protective Clothing or Equipment: Not necessary under conditions of normal use. 其他防护服装或设备：正常使用条件下不必考虑。 Personal Protection is recommended for venting battery: Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields. 当电池排气阀打开时，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。

Section 9- Physical and Chemical Properties

第九部分 理化特性

Physical State **物理状态**	Form: Solid 形态：固体
	Color: Blue

	颜色：蓝色
	Odour: Odorless 气味：无气味
Change in condition **变化条件:**	
pH, with indication of the concentration **pH，有浓度指示**	No data is available 无数据可提供
Melting point/freezing point **熔点/凝固点**	No data is available 无数据可提供
Boiling Point, initial boiling point **沸点，初沸点**	No data is available 无数据可提供
Flash Point **闪点**	No data is available 无数据可提供
Upper/lower flammability or explosive limits **上/下燃烧或爆炸限值**	No data is available 无数据可提供
Vapor Pressure **蒸汽压**	No data is available 无数据可提供
Vapor Density: (Air = 1) **蒸汽密度: (空气= 1)**	No data is available 无数据可提供
Density/relative density **密度/相对密度**	No data is available 无数据可提供
Solubility in Water **水溶性**	Insoluble 不能溶解
n-octanol/water partition coefficient **正辛醇/水分配系数**	No data is available 无数据可提供
Auto-ignition temperature **自燃温度**	No data is available 无数据可提供
Decomposition temperature **分解温度**	No data is available 无数据可提供
Odout threshold **溴阈**	No data is available 无数据可提供

Evaporation rate **蒸发速率**	No data is available 无数据可提供
Flammability (soil, gas) **易燃性（土壤，气体）**	No data is available 无数据可提供
Viscosity **粘度**	No data is available 无数据可提供

Section 10 – Stability and Reactivity

第十部分 稳定性和反应性

Stability **稳定性**	Stable under normal temperatures and pressures. 常温常压下稳定。
Conditions to Avoid **应避免的条件**	Heat above 70°C or Incinerate, Deform, Mutilate, Crush, Disassemble, Overcharge, Short circuit, Expose over a long period to humid conditions. 加热 70°C 以上或焚烧、变形、毁坏、粉碎、拆卸、过充电、短路，长时间暴露在潮湿的条件下。
Hazardous Decomposition Products **危害分解物**	Toxic Fumes, and may form peroxides. 有毒烟雾，并可能形成过氧化物。
Possibility of Hazardous Reaction **危险反应的可能性**	If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons. 如果发生泄露，避免与强氧化剂，无机酸，强碱，卤代烃接触。

Section 11 – Toxicological Information

第十一部分 毒理学信息

Irritation **刺激**	In the event of exposure to internal contents, vapor fumes may be very irritating to the eyes and skin. 内部物质暴露的情况下，蒸汽烟雾可能对眼睛和皮肤产生刺激性。
Sensitization **致敏**	No data is available 无数据可提供
Reproductive Toxicity **再生毒性**	No data is available 无数据可提供
Toxicologically Synergistic Materials	No data is available 无数据可提供

协同材料毒理学	

Section 12-Ecological Information

第十二部分 生态学信息

General note **通用信息**	Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. 不允许未稀释或大量的产品到达地下水、水道或污水系统。
Anticipated behavior of a chemical product in environment/possible environmental impact/ ecotoxicity **化学产品在环境/可能的环境预期的行为的一种生态毒性**	No data is available 无数据可提供
Mobility in soil **土壤中移动性**	No data is available 无数据可提供
Persistence and Degradability **持久性和降解性**	No data is available 无数据可提供

Section 13 – Disposal Considerations

第十三部分 废弃处置

Waste Treatment **废弃处置方法**	Recycle or dispose of in accordance with government, state & local regulations. 建议遵照国家和地方法规处置或再利用。
Attention for Waste Treatment **废弃注意事项**	Deserted batteries couldn't be treated as ordinary trash. Couldn't be thrown into fire or placed in high temperature. Couldn't be dissected, pierced, crushed or treated similarly. Best way is recycling. 废电池不能被当做普通垃圾。不能扔进火中或置于高温下。不能解体，刺穿，破碎或类似的处理。最好的办法是回收利用。

Section 14 – Transport Information

第十四部分 运输信息

The Li-ion Battery (mode: BPS-LFP7AHP) tested acc ording to the requirements of the UNITED NATIONS

"Manual of Tests and Criteria" Part III, subsection 38.3;

该锂离子电池（型号：BPS-LFP7AHP）经过测试符合联合国《试验和标准手册》第三部分，第 38.3 章节的要求。

The Li-ion Battery was protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit;

该锂离子电池做了防短路保护。包括防止与同一封装内的导电材料接触可能导致的短路。

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking.

包装应足以避免在运输，处理和堆放期间的机械损坏。

The package must be handled with care and that a flammability hazard exists if the package is damaged.

包装必须小心处理，如果包装损坏，存在易燃危险。

With regard to transport, the following regulations are cited and considered:

关于运输，引用和考虑了以下法规：

- The International Air transport Association (IATA) Dangerous Goods Regulations.

- 国际航空运输协会（IATA）危险物品规则。

The Li-ion Battery can be shipped by air in according to Section IA of PACKING INSTRUCTION 965, or Section I of PACKING INSTRUCTION 966～967 of the 2024 IATA Dangerous Goods regulations 65th Edition.

该锂离子电池可以根据 2024 年 IATA 危险物品规则第 65 版包装指令 965 第 IA 部分或包装指令 966～967 第 I 部分运输。

UN number of lithium battery: UN3480 or UN3481;

锂电池的 UN 编号：UN3480 或 UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries packed with equipment or Lithium ion batteries contained in equipment;

UN 合适的运输名称/描述（技术名称）：锂离子电池，锂离子电池与设备包装在一起或锂离子电池内置于设备中;

UN Classification (Transport hazard class): Class 9

UN 分类（运输危险类别）：9 类危险品

PG Packing Group: Group II (PI 965 Section IA or PI 966 Section I)

PG 包装等级: II 级包装（包装指令 965 第 IA 部分或包装指令 966 第 I 部分）

PG Packing Group: N/A (PI 967 Section I)

PG 包装等级: 不适用（包装指令 967 第 I 部分）

- The International Maritime Dangerous Goods (IMDG) Code.

- 国际海运危险货物（IMDG）规则。

The battery is classified as dangerous goods according to IMO IMDG Code (inc Amdt 41-22).

海运按照 IMO IMDG Code (inc Amdt 41-22) 该电池按危险货物条件办理。

UN number of lithium battery: UN3480 or UN3481;

锂电池的 UN 编号：UN3480 或 UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries packed with equipment or Lithium ion batteries contained in equipment;

UN 合适的运输名称/描述（技术名称）：锂离子电池，锂离子电池与设备包装在一起或锂离子电池内置于设备中;

UN Classification (Transport hazard class): Class 9

UN 分类（运输危险类别）：9 类危险品

PG Packing Group: Group II (Lithium ion batteries or Lithium ion batteries packed with equipment)
PG 包装等级: II 级包装（锂离子电池或锂离子电池与设备包装在一起）
PG Packing Group: N/A (Lithium ion batteries contained in equipment)
PG 包装等级: 不适用（锂离子电池内置于设备中）
Marine pollutant(Y/N): N
海洋污染物（Y / N）：N
Need to meet the Special Provision: International maritime dangerous goods code (IMDG) 230, 348, 384.
需要符合这些特殊条款：国际海运危险货物规则（IMDG）230, 348, 384.
Packing Instruction: P903
包装指令：P903
EmS No.: F-A, S-I
EmS 编号: F-A, S-I

Section 15 – Regulatory Information

第十五部分 法规信息

《Dangerous Goods Regulations》
《危险物品规则》
《Recommendations on the Transport of Dangerous Goods Model Regulations》
《危险货物运输的建议模型规定》
《International Maritime Dangerous Goods》
《国际海上危险货物运输》
《Technical Instructions for the Safe Transport of Dangerous Goods》
《危险货物安全运输技术指南》
《Classification and code of dangerous goods 》
《危险货物分类与代码》
《Occupational Safety and Health Act 》(OSHA)
《职业安全与健康法案》(OSHA)
《Toxic Substance Control Act》(TSCA)
《有毒物质控制法》（TSCA）
《Consumer Product Safety Act 》(CPSA)
《消费者产品安全法案》（CPSA）
《Federal Environmental Pollution Control Act》(FEPCA)
《联邦环境污染控制法》（FEPCA）
《The Oil Pollution Act》(OPA)
《石油污染法》（OPA）
《Superfund Amendments and Reauthorization Act TitleⅢ(302/311/312/313)》(SARA)
《超级基金修正案和再授权法案 TitleⅢ(302/311/312/313)》(SARA)
《Resource Conservation and Recovery Act》(RCRA)

《资源保护和恢复法案》（RCRA）

《Safety Drinking Water Act》(CWA)

《安全饮用水法》（CWA）

《California Proposition 65》

《加州 65 号提案》

《Code of Federal Regulations》(CFR) 49 CFR sections 100-185, 49 CFR -173.185

《联邦条例》(CFR) 49 CFR sections 100-185, 49 CFR -173.185

New EU Battery Regulations (EU) 2023/1542

欧盟新电池法规 (EU) 2023/1542

Regulation (EC) No. 1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

关于化学品的注册、评估、授权和限制(EC)第 1907/2006 号规例

In accordance with all Federal, State and local laws.

符合所有联邦、州和地方法律。

Section 16 – Additional Information

第十六部分 其他信息

The information above is believed to be accurate and represents the best information currently available to us. However, we makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.

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