Material Safety Data Sheet
化学品安全技术说明书

Sample name:	**LiFePO4 Lithium battery pack**
样品名称：	磷酸铁锂电池组
Model/Type:	**6412**
样品型号：	
Applicant:	**Zhongshan Kangjun New Energy Technology Co., Ltd**
委托单位：	中山市康君新能源科技有限公司
Issued Date：	**2026.04.24**
签发日期：	

Written by 编写: abner wei

Approved by 审核: Cindy yang

RHENISH-LAB TESTING (SHENZHEN) CO.,LTD. APPROVED

仁测认证检测（深圳）有限公司

Rhenish-Lab Certification & Testing (Shenzhen) Co., Ltd.

Section 1- Chemical Product and Company Identification 第一部分 化学品及企业标识			
Product Name 产品名称	LiFePO4 Lithium battery pack 磷酸铁锂电池组		
Model/type reference 型号/规格	6412		
Trade Mark 商标	/		
Nominal Voltage 标称电压	6.4V		
Rated Capacity / Energy 额定容量/ 能量	12Ah/ 76.8Wh		
Manufacturer's name 制造商名称	Zhongshan Kangjun New Energy Technology Co., Ltd 中山市康君新能源科技有限公司		
Manufacturer's address 制造商地址	5th Floor, Building 6, No. 106 Pinghe Road, Tongyi Industrial Park, Guzhen Town, Zhongshan City 中山市古镇镇同益工业园平和路106号第6栋5楼		
Emergency Telephone 应急电话	15989991113	E-mail 邮箱	277381002@qq.com

Section 2 - Hazards Identification 第二部分 危险性概述	
Hazard Description 危险性描述	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。 Not dangerous with normal use. Do not dismantle, open or shred the battery ingredients contained within or their ingredients products could be harmful.
Primary Route(s) of Exposure 接触途径	吸入、食入、皮肤接触、眼睛接触。 Inhalation, ingestion, Skin contact and Eye contact.
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 成份/组成信息

Chemical Name 化学名称	CAS Number CAS 号	Weight-% 百分含量
镍钴锰酸锂 Lithium Nickle Cobalt Manganese Oxide	182442-95-1	35.733%
聚偏二氟乙烯 PVDF	24937-79-9	0.950%
石墨 Graphite	7782-42-5	19.474%
碳酸乙烯酯 (EC)	96-49-1	3.758%
碳酸甲乙酯 (EMC)	623-53-0	2.821%
碳酸二甲酯 (DMC)	616-38-6	7.517%
碳酸丙烯酯 (PC)	108-32-7	1.693%
碳酸亚乙烯酯 (VC)	872-36-6	0.181%
六氟磷酸锂 (Lithium Hexafluorophosphate)	21324-40-3	2.821%
羧甲基纤维素钠 CMC	9004-32-4	0.244%
聚丙烯 Polypropylene	9003-07-0	7.353%
铜 Copper	7440-50-8	10.555%
铝 Aluminium	7429-90-5	5.973%
镍 Nickel	7440-02-0	0.317%
丁苯橡胶 SBR	9003-55-8	0.407%
炭黑	1333-86-4	0.203%

Carbon Black		

Note: CAS number is Chemical Abstract Service Registry Number.
注：CAS 号是化学文摘社的注册号。
Not applicable.
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 for15 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. 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 Fire-extinguishing 灭火注意事项	The firemen should put on antigas masks and full fire-fighting suits. 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 泄漏应急处理	
Personal Precautions, protective equipment, and emergency procedures 个人预防措施、防护设备和应急程序	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. 在清理工作完成之前，禁止进入该区域。不要碰溢出的材料。按照第 8 节的规定，穿戴足够的个人防护装备。
Environmental Precautions 环保措施	Prevent material from contaminating soil and from entering sewers or waterways. 防止材料污染土壤和进入下水道或水道。
Methods and materials for Containment 密封材料的方法	Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately. 如果安全的话，就堵住泄漏。用干沙子或泥土把溢出的液体堵住。立即清理溢出物。
Methods and materials for cleaning up 清理材料的方法	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. 用惰性吸附剂(干沙子或泥土)吸收溢出的材料。将受污染的吸收剂倒入可接受的废物容器中。收集所有受污染的吸收剂，并按照第 13 章的废弃弃置。用清洁剂和水擦洗该区域;收集所有受污染的洗净水，妥善处理。

Section 7 - Handling and Storage 第七部分 操作处置与储存	
Handling 操作	Don’t handle battery with metalwork. Do not open, dissemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace. Prevent formation of dust. 不要将电池和金属制品一同处理。不要打开，拆解，挤压或燃烧锂电池。确保工作场所通风良好。防止粉尘的形成。 Information about protection against explosions and fires: Keep ignition sources away- Do not smoke. 爆炸和着火防护信息: 远离火源——严禁吸烟。
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.

	如果电池将进行超过 3 个月的长时间存储，建议定期对锂电池进行充电。 And recommended at 0℃~35℃, 45 to 85%RH for long period storage. 建议长时间存储将存储温度控制在 0℃~35℃，45 to 85%RH. Do not store battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects. 不要将电池随意的放置在箱子或抽屉，这样也许会使电池互相短路或被其他金属物品短路。 Keep out of reach of children. 放置于小孩不能接触的地方。 Do not expose battery to heat or fire. Avoid storage in direct sunlight. 不要将电池暴露在热源或火焰中。避免放置在阳光直射的地方。 Do not store battery together with oxidizing and acidic materials. 不要将电池与氧化物和酸性物质存储在一起。

Section 8 - Exposure Controls and Personal Protection
第八部分 接触控制和个人防护

Engineering Controls 工程控制	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. 使用当地的排气通风或其他工程控制来控制灰尘、雾、烟雾和蒸汽的来源。 Keep away from heat and open flame. Store in a cool, dry place. 远离热源和明火。存放于阴凉干燥处。
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
	Shape: Cuboid 形状：长方体
	Color: Silver 颜色：黑色
	Odor: If leaking, smells of medical ether. 气味：泄漏时，医用乙醚的气味
pH, with indication of the concentration pH 值，表示浓度	Not applicable 不适用
Melting point/freezing point 熔点与凝固点	No relevant information Available 没有相关资料
Boiling Point 沸点	No relevant information Available 没有相关资料
Flash Point 闪点	No relevant information Available 没有相关资料
Upper/lower flammability or explosive limits 上/下可燃性或爆炸性极限	No relevant information Available 没有相关资料
Vapor Pressure 蒸气压	Not applicable 不适用
Vapor Density (Air = 1) 蒸汽密度（1 个大气压）	Not applicable 不适用
Density/relative density 密度/相对密度	No relevant information Available 没有相关资料
Solubility in Water 水溶性	Insoluble 不相溶
Decomposition temperature 分解温度	No relevant information Available 没有相关资料
Evaporation rate	No relevant information Available

蒸发率	没有相关资料
Flammability (soil, gas) 可燃性（土壤，大气）	No relevant information Available 没有相关资料
Viscosity 粘度	Not applicable 不适用

Section 10 - Stability and Reactivity
第十部分 稳定性和反应活性

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°℃ 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。

第十一部分 毒理学信息
Section 11 - Toxicological Information

Irritation 刺激性	Risk of irritation occurs only if the internal cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur. 只有当内部电芯被机械、热或电滥用到损害外壳的程度时，才会发生刺激的风险。 如果发生这种情况，皮肤、眼睛和呼吸道可能会受到刺激。
Sensitization 感光性	No relevant information Available 没有相关资料
Neurological Effects 神经系统影响	No relevant information Available 没有相关资料
Reproductive Toxicity 生殖毒性	No relevant information Available 没有相关资料
Mutagenicity (Genetic Effects)	No relevant information Available 没有相关资料

诱变（遗传反应）	

Section 12 - Ecological Information
第十二部分 生态学信息

General note: 一般性注释	Water hazard class 1(Self-assessment): slightly hazardous for water. 1级水危害(自评):对水有轻微危害。 Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. 不要让未经稀释的产品或大量的产品到达地下水，水道或污水系统。 Dispose of batteries away from fire, rain and snow. 处置废弃电池时，远离火源，雨水和雪水。
Anticipated behavior of a chemical product in environment/possible environmental impace/ ecotoxicity 化学品在环境中的预期行为/可能的环境影响/生态毒性	No relevant information Available 没有相关资料
Mobility in soil 土壤中移动性	No relevant information Available 没有相关资料
Persistence and Degradability 持久性和降解性	No relevant information Available 没有相关资料
Bioaccumulation potential 生物体内积累的潜伏	No relevant information Available 没有相关资料
Other Adverse Effects 其他有害效应	No relevant information Available 没有相关资料

Section 13 - Disposal Considerations
第十三部分 废弃处置

Product disposal Recommendation 产品废弃处理建议	Observe local, state and federal laws and regulations. 遵守当地、州和联邦法律和法规。
Packaging disposal	Disposal must be made according to official regulations.

Recommendation 包装处理建议	废弃处理必须根据当地法规。

Section 14 - Transport Information
第十四部分 运输信息

UN 编号 UN Number	UN3480，UN3481
Transport hazard class(es) 运输风险类别	9
Packing group 包装等级	Not Applicable 不适用
UN Proper shipping name 联合国运输专用名称	UN3480: Lithium ion Batteries (including lithium ion polymer batteries) UN3480: 锂离子电池(包括锂离子聚合物电池) UN3481: Lithium ion Batteries packed with equipment (including lithium ion polymer batteries) UN3481: 锂离子电池和设备包装在一起(包括锂离子聚合物电池) UN3481: Lithium ion Batteries contained in equipments (including lithium ion polymer batteries) UN3481: 设备里内含锂离子电池(包括锂离子聚合物电池)
ICAO/IATA	According to the NEW PACKING INSTRUCTION PI 965 Section IA/IB；PI 966 Section I/Ⅱ；PI 967 Section I/Ⅱ of IATA DGR 67th Edition 根据国际航空运输协会DGR第67版新包装指令PI 965 Section IA/IB；PI 966 Section I/Ⅱ；PI 967 Section I/Ⅱ进行运输。
IMDG CODE	The International Maritime Dangerous Goods Code, (IMDG CODE) (Amdt 42-24), Special Provision 188. 《国际海运危险货物规则》 (IMDG CODE) (Amdt 42-24) ,特殊规定188
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), Special Provision 188 《国际危险货物道路运输欧洲协定》（ADR）,特殊规定188.
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail, Special Provision 188. 《国际危险货物铁路运输欧洲协定》(RID)，特殊规定188.
The dangerous goods regulations require that each battery design be subject to tests contained in Section 38.3 of the UN Manual of Tests and Criteria prior to being offered for transport. 危险品规则规定，运输前，每一个电池设计须通过联合国试验和标准手册38.3节的测试。	

Section 15 - Regulatory Information

第十五部分 法规信息

IATA DGR《Dangerous Goods Regulations》
国际航空运输协会《危险品规则》
《International Maritime Dangerous Goods》 (IMDG CODE) (42-24)
《国际海运危险货物规则》 (IMDG CODE)(42-24版)
《Agreement concerning the International Carriage of Dangerous Goods by Road》 (ADR 2025)
《国际危险货物道路运输欧洲协定》（ADR）(2025版)
《Regulations Concerning the International Carriage of Dangerous Goods by Rail》 (RID 2025)
《国际危险货物铁路运输欧洲协定》（RID）（2025版）
《United Nations Recommendations on the Transport of Dangerous Goods-Model Regulations》 (23rd)
联合国关于《关于危险货物运输的建议书规章范本》 （23版）
《Regulations on the Safety Management of Hazardous Chemicals》
危险化学品安全管理条例》
《Classification and code of Dangerous Goods》
《危险品货物分类和品名编号》
《Occupational Safety and Health Act》(OSHA)
《职业安全卫生法》
《Toxic Subatance Control Act》(TSCA)
《毒性物质控制法》
《Superfund Amendments and Reauthorization Act Title III （302/311/312/313）》
《附加基金修正复审法III （302/311/312/313）》
In according with United Nations, country, and local laws.
参照联合国，国家，地方性法规。

Section 16 - Other 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, RLCT makes no warranty of ability 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.
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-- End of Report --
-- 报告结束 --