No.SET2022-15601

化学品安全技术说明书

Material Safety Data Sheet（MSDS) Report

委托单位： **Client unit**	Beltrona GmbH & Co.KG
样品名称： **Name of sample**	可充电磷酸铁锂电池组 Rechargeable LiFePO4 Battery Pack
委托单位地址： **Address**	Schmeienstr. 50 72510 Stetten a.k.M.

Tested By 主检：		Checked By 审核：		Approved By 批准：	
Date 日期：	2022 年 11 月 23 日	Date 日期：	2022 年 11 月 23 日	Date 日期：	2022 年 11 月 23 日

Query No. :2OGYaAPU

1化学品及企业标识Identification of product and company

样品名称 Product name: 可充电磷酸铁锂电池组 Rechargeable LiFePO4 Battery Pack
型号 Part No.： R-LFP12.8V24Ah
制造商/供应商： 衡阳市瑞启新能源有限公司
Manufacturer/Producer: HENGYANG RICH POWER CO., LTD
地址： 湖南省衡阳市石鼓区松木乡新竹村
Address: Xinzhu Village Songmu Town, Shigu District, Hengyang 421005, China
邮编 Post Code： /
电话Telephone： /
传真Fax: /
电子邮件Mail:/
化学品安全技术说明书号MSDS code： SET2022-15601

2危险性概述Hazards identification

紧急情况概述:可能在火灾爆炸,释放刺激性气体。
Emergency Overview: May explode in a fire, which could release irritant gas.

侵入途径Primary routes of entry:
皮肤接触： 正常情况下无已知的重大影响或危害。接触已损坏电池可能引起灼伤。
Skin contact: No known significant effects or critical hazards under normal use.Contact with damaged batteries may cause burns.

眼睛接触： 正常情况下无已知的重大影响或危害。接触已损坏电池可能引起灼伤。
Eye contact: No known significant effects or critical hazards under normal use.Contact with damaged batteries may cause burns.

吸入： 电池泄漏释放蒸汽或气体，吸入可能导致刺激呼吸道及眼睛。
Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries maycause respiratory and eye irritation.

摄入： 产品内物质摄入人体可能会引起口腔、喉咙和肠道烧伤和伤害。
Ingestion: Ingestion of product contents may cause mouth, throat and intestinal burns and damage.

3成分/组成信息Composition/information on ingredients

Chemical characterization:

化学成份 **Chemical composition**	**CAS 号** **CAS No.**	重量百分比 **in % by weight**
磷酸铁锂/Lithium IronPhosphate(LiFePO4)	15365-14-7	16-20%
铜/ Copper(Cu)	7440-50-8	6.5-10%
铁/Iron(Fe)	7439-89-6	14.5-20%
石墨/ Graphite	7782-42-5	5-8%
铝/ Aluminium(Al)	7429-90-5	3-5.5%
聚乙烯/ Polyethylene	9002-88-4	2.0%
炭黑/Carbon black	1333-86-4	5-10%
六氟磷酸锂 /Phosphate(1-),hexafluoro-,lithium(LiPF6)	21324-40-3	10-15%
ABS(C15H17N)	9003-56-9	14-15%
铅/Lead	7439-92-1	Not Detected
镉/Cadmium	7440-43-9	Not Detected
汞/Mercury	7439-97-6	Not Detected
锡/Tin	7440-31-5	2-5%
Other	------	5-10%

缩写Abbreviation：
CAS：化学文摘服务
CAS: Chemical Abstract Service
EC：欧盟委员会编号
EC: European Inventory of Existing Commercial chemical Substances
NA =不适用
NA = Not apply.

4急救措施First aid measures

皮肤接触：如果电池泄漏，电池内物质接触到皮肤，立即脱去污染的衣着，用大量清水冲洗15分钟以上。仍感觉刺激或疼痛，立刻就医。
Skin contact: If the battery is leaking and the contained material contacts the skin, remove contaminated clothes quickly and rinse the skin with plenty of water at least 15 minutes. If irritation or pain persists, get medical aid at once.

眼睛接触：如果电池泄漏，电池内物质接触到眼睛，用大量清水或生理盐水冲洗15分钟以上。立刻就医。
Eyes contact: If the battery is leaking and the contained material contacts the eyes, flush the eyes with plenty of water or saline water at least 15 minutes. Get medical aid at once.
吸入：如果电池泄漏，迅速脱离现场至空气新鲜处。保持呼吸道通畅。如呼吸困难，给输氧。就医。
Inhalation: If the battery is leaking, remove to fresh air immediately. Keep the respiratory tract smooth. Use oxygen if available.Get medical aid.
摄入：如果电池泄漏，电池内物质摄入人体，立即用清水冲洗口腔及周边。立刻就医。
Ingestion: If the battery is leaking and the contained material is ingested, rinse mouth and surrounding area with clear water at once. Get medical aid at once.

5消防措施Fire fighting measures

危险特性：当产品暴露在火中时，会引起爆炸和释放分解有害物质。
Danger characteristic: Products may burst and release hazardous decomposition products when exposed to a fire situation.
有害燃烧产物：一氧化碳、二氧化碳、金属氧化物、刺激性烟雾等。
Hazardous combustion products: Carbon monoxide, carbon dioxide, metal oxide, irritate fume, etc.

灭火方法及灭火剂：消防人员必须佩戴过滤式防毒面具(全面罩)或隔离式呼吸器、穿全身防火防毒服，在上风向灭火。尽可能将容器从火场移至空旷处。喷水保持火场容器冷却，直至灭火结束。灭火剂：雾状水、泡沫、干粉、二氧化碳、砂土。
Fire-Fighting method & media: The staff must equipped with filtermask (full mask) or isolated breathing apparatus. The staff must wear the clothes which can defense the fire and the toxic gas. Put out the fire in the upwind direction. Remove the container to the open space as soon as possible. Sparying water on the containers in the fireplace to keep them cool until finish extinguishment. Media: hazy water, foam, powder, CO2, sandy clay.

6泄漏应急处理Accidental release measures

应急处理：
1.迅速撤离泄漏污染区人员至安全区，并进行隔离，严格限制出入；
2.提供适当的防护及通风设备；
3.用一个不产生粉尘的方法打扫处理泄漏物，尽可能多地收集泄漏处理物于有标签的合适的容器中；
4.在安全状况下，选用合适方式阻止或减少泄漏，如用沙或泥土收齐围堵泄漏物；
5.尽可能切断泄漏源，避免流入下水道或其它密闭空间；
6.如果大量泄漏，收集回收泄漏物于合适且标示的有盖容器内，并运往专门废物处理场所处置。
Disposal methods:
1. Rapid evacuation leakage pollution area personnel to safe areas, and isolation, strictly limited access;
2. Provide adequate protection and ventilation equipment;
3.Cleaning the spillage with the method does not produce dust, collect the leakage in a suitable labeled

containers much as possible;
4. In a safe condition, choose appropriate ways to prevent or reduce leakage, for example use sand or clay ring-fence leakage, possible cut off leakage source, avoid into sewer or other enclosed spaces;
5. Cut off the source of leakage as much as possible, avoid entering sewers or other confined space;
6. If a large number of leakage, collect and recycle leakage to suitable and indicative covered container, and shipped to a special waste disposal site disposal.

废弃处理方法: 所有废弃物必须参照联合国，国家，地方性法规进行处置。
Waste treatment methods: Allwaste must be referring to the United Nations, national and local regulations for disposal.

7 操作处置与储存Handling and storage

操作注意事项：工作现场应保持通风。远离热源。未使用时密封容器。减少粉尘积聚和产生。避免眼睛接触，避免呼吸粉尘。空容器会包含此化学品残留，不要对空容器进行损坏。
Handling: Job site should keep ventilation. Keep away from heat. Sealed containerwhennot using. Reduce dust accumulation and generation. Avoid eye contact. Avoid breathing dust. Empty containers will contain this chemical residue.Don’t damage the empty container.

储存注意事项：储存在一个低温，干燥，通风良好的环境。避免阳光直射。储存时远离食物和水源，吃饭喝水前彻底清洗双手。远离禁忌物，如强氧化剂，强酸。远离火种、热源。配备相应品种和数量的消防器材。储区应备有泄漏应急处理设备和合适的收容材料。
Storage: Stored in a low temperature, dry, well ventilated environment. Avoid direct sunlight.Store away from food and water, wash your hands thoroughly before eat bread or drink water. Far from taboo object, such as strong oxidizer, strongacid.Keep away from fire and heating sources.Equipped with corresponding varieties and number of fire equipment. Storage areas should be equipped with leakage emergency treatment equipment and suitable for accept materials.

8接触控制/个体防护Exposure controls and personal protection

监测方法：无数据资料。
Monitoring method: No data available.
工程控制：密闭操作时注意通风。确保车间蒸汽浓度在现行OSHA的要求下
Engineering controls: Ensure vapor concentration in the workshop under the requirements of existing OSHA.
呼吸系统防护：空气中浓度超标时，必须佩戴自吸过滤式防毒面具（半面罩）。紧急事态抢救或撤离时，应该佩戴空气呼吸器。
Respiratory system safeguard: Exceed the standard concentration in air, must wear self-priming filter type gas mask (half mask), emergency rescue or evacuation, should wear air respirator.
眼睛防护：如有需要，戴化学安全防护眼镜。
Eye safeguard: If necessary, wear chemical safety protective glasses.
身体防护：穿防静电服。
Body safeguard: Wear anti-static clothes.
手防护：戴手套。

Hand safeguard: Wear glove.
其他防护：工作现场严禁吸烟。避免长期反复接触电解液。
Else safeguard: No smoking at job site.Avoid prolonged and repeated contactelectrolyte.

9 理化特性Physical and chemical properties:

9.1物理化学性质Physical and chemical properties:
沸点Boiling Point:无数据资料No Data
相对蒸气密度relative vapour density: 无数据资料No Data
饱和蒸气压saturated vapor pressure: 无数据资料No Data
额定容量Rated capacity:24Ah
额定能量Rate Energy:307.2Wh

10稳定性和反应活性Stability and reactivity

稳定性：常温常压下稳定。
Stability: Stable under ordinary conditions of use and storage.
避免接触的条件：无数据资料
Avoid contact conditions: No data available
禁配物：强氧化剂，强酸
Prohibited content: Strong oxidizer, strong acids
聚合危害：无数据资料
Aggregate harm: No data available
分解产物：正常情况下使用，无有害物质产生。
Decomposition product: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11毒理学资料Toxicological information

毒理学影响的信息 toxicology influencing information(正常使用 Normal usage)
急性毒性：无数据资料
Acute toxicity: No known significant effects or critical hazards.
刺激性：部分成分吸入和皮肤接触可能引起过敏。
Irritation: Part of composition may cause sensitization by Inhalation and skin contact.
慢性毒性：无已知重大影响或严重危害。
Chronic toxicity: No known significant effects or critical hazards.
致癌性：无已知重大影响或严重危害。
Carcinogenicity: No known significant effects or critical hazards.
生殖毒性：无已知重大影响或严重危害。
Reproduction toxicity: No known significant effects or critical hazards.
下列情况下会危险人员身体健康:如果与电池内部材料直接接触，皮肤可能会出现干燥、灼烧等轻微或严重的刺激，并且损坏靶器官的神经，肝脏和肾脏。Medical conditions generally aggravated by

exposure: In the event of exposure to internalcontents，moderate to server irritation， burning and dryness of the skin may occur， Targetorgans nerves, liver and kidneys.

12生态学资料Ecological information

生态毒性：无已知重大影响或严重危害。
Ecotoxicity: No known significant effects or critical hazards.
生物降解性：无已知重大影响或严重危害。
Biological degradability: No known significant effects or critical hazards.
非生物降解性：无已知重大影响或严重危害。
Non-living things degradability: No known significant effects or critical hazards.
生物富集和生物积累性：无已知重大影响或严重危害。
Biology gathering and biology accumulate: No known significant effects or critical hazards.

13废弃处置Disposal considerations

废弃处置方法：所有废弃物必须参照联合国，国家，地方性法规进行处置。参照地方法规，倾倒或丢弃的物质可能作为一种限制性的废弃物。清洗过盛装此物质容器的溶液也要按规定处理。需遵守废弃法, 大气污染法，水质污染法进行处置。
Waste disposal methods: All waste must be referring to the United Nations, national and local regulations for disposal, the dumped or discarded material may be regard as a restrictive waste referring to local regulations. Cleaned containers containing this substance were also required treatment. Complywithwaste law. Atmospheric Pollution Act and water pollution law for disposal.

14运输信息Transport information

危险货物编号 Number of dangerous goods: 9
UN 编号 UN Number：3480 ，3481，3171

运输注意事项：
货物应符合2022年国际航空运输协会危险货物规则（第63版），包装规范PI952, PI965-967第I or IA部分，以及应通过UN38.3测试，并符合2020年（第40-20版）国际海运第9类危险品货物规则。
产品应妥善包装，防止电池短路。运输前应先检查包装容器是否完整、密封。运输过程中要确保容器不泄漏、不倒塌、不坠落、不损坏。防止货物倒塌。严禁与氧化剂、食品等混装混运。运输车船必须彻底清洗、消毒，否则不得装运其它物品。运输过程中防止曝晒，雨淋，高温。中途停留时应远离火种、热源。船运时，配装位置应远离卧室、厨房，并与机舱、电源、火源等部位隔离。公路运输时要按规定路线行驶，勿在居民区和人口稠密区停留。禁用木船、水泥船散装运输。

Transport Attentions:
The goods shall be complied with the requirements of 63rd DGR Manual the Packing Instruction952，965-967,Section I or IA(2022 edition), including the passing of the UN38.3 test, And also comply with the Regulations for Dangerous Goods, Category 9, International Maritime Transport, (Amdt.40-20) 2020 Edition .The batteries should be securely packed and protected against short-circuits. Examine whether the

package of the containers are integrate and tighten closed before transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles. Don't put the goods together with oxidizer and chief food chemicals. The transport vehicle and ship must be cleaned and sterilized otherwise it is not allowed to assemble articles. During transport, the vehicle should prevent exposure, rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, the assemble place should keep away from bedroom and kitchen, and isolated from the engine room, power and fire source. Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don't stop over in the residential area and congested area. Forbid to use wooden, cement for bulk transport.

15法规信息Regulations

法律信息 Law 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》
Recommendation 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》Toxic Substance Control Act(TSCA)
《消费产品安全法》Consumer Product Safety Act(CPSA)
《联邦环境污染控制法》Federal Environmental Pollution Control Act(FEPCA)
《石油污染法案》The Oil Pollution Act(OPA)
《超级基金修正案和再授权法案 1I(302/311/312/313)》
Superfund Amendments and Reauthorization Act Title II (302/311/312/313)(SARA)
《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)
《加州 65 提案》California Proposition 65
《美国联邦法规》Code of Federal Regulations(CFR)
根据所有联邦、州和地方法律。
In according with all Federal, State and local laws.

16其他信息Other information

上述信息视为正确，但不包含所有的信息，仅作为指引使用。本文件中的信息是基于现有的数据信息，该信息不代表保证此产品的性质。在实际应用过程中，可能出现其他未预料的情况，其相应信息可能需要修改，我方对任何操作或者接触上述产品而引起的损害不负有任何责任。

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****** 报告结束 END OF REPORT ******