Report No.: CESMSDS221229010

Material Safety Data Sheet

材料安全数据表

Name of Sample: Li-ion Battery Pack

产品名称 ： 锂离子电池组

Model Specification:

产品型号： VENUS-BAT-5

Client: Hunan Wisdom Technology Co., Ltd.

委托单位 ： 湖南唯电科技有限公司

先进储能材料国家工程研究中心有限责任公司检测中心

Test Center of National Engineering Research Center of Advanced Energy Storage Materials Co., Ltd.

说　明
Marking

1. 报告无“报告专用章”无效。

   The test report is invalid without “Special seal for report”.

2. 报告无批准人、审核人和编制人签名无效。

   The test report is invalid without the signatures of Approver, Reviewer and writer.

3. 报告涂改无效。

   The test report is invalid if altered.

4. 对检测报告若有异议，应于收到报告之日起十五天内向检测单位提出。

   Objections to the test report must be submitted to Test Center within15 days.

5. 报告仅对送检样品负责。

   The test report is Valid for the tested samples only.

6. 未经实验室书面批准，不得部分复制本报告书。

   The partial replica of this report is prohibited without the written approval of CES.

检测单位地址：广东省深圳市宝安区石岩街道天宝路2号新永丰工业园B栋1楼A
Lab Address：A, 1st Floor, Building B, Xinyongfeng Industrial Park, No. 2 Tianbao Road, Shiyan Street, Baoan District, Shenzhen, Guangdong, China
电话(TEL)：86-755-22678310
传真(FAX)：0755-22678299
邮政编码(Post Code)：518108
网址(Website)：www.cescert.com
E-mail：service@cescert.com

Material Safety Data Sheet

材料安全数据表

Section 1——Chemical Product and Company Identification 化学品及企业标识			
Product Name: 产品名称：	Li-ion Battery Pack 锂离子电池组		
Type/Mode: 样品型号：	VENUS-BAT-5 (51.2V 100Ah 5120Wh)		
Commissioned by: 委托单位：	Hunan Wisdom Technology Co., Ltd. 湖南唯电科技有限公司		
Commissioner address: 委托单位地址：	building 15, Xingsha International Enterprise Center, No. 68, Changsha Economic and Technological Development Zone, Hunan, China 长沙经济技术开发区螺丝塘路 68 号星沙国际企业中心第 15 栋 405 号		
Manufacturer: 生产单位：	Hunan Wisdom Technology Co., Ltd. 湖南唯电科技有限公司		
Inspection according to: 鉴定依据：	EEC Directive 93/112/EC UN "Recommendations on the TRANSPORT OF DANGEROUS GOODS" 联合国《关于危险品货物运输的建议书》		
Emergency telephone call: 应急电话：	0731-86207800		
Issue Date 签发日期	2023-01-01	Effective Date 生效日期	2023-01-01

Written by 编制 Reviewed by 审核 Approved by 批准

Section 2. Composition/information on Ingredient
成分/组成信息

Chemical Name 化学品名称	**Chemical Formula 化学式**	**CAS No. CAS 号**	**Composition 成份 (in % by weight) (重量百分比)**
Lithium Iron Phosphate 磷酸铁锂	$LiFePO_4$	15365-14-7	39.63
Graphite 石墨	C	7782-42-5	19.72
Organic electrolyte 电解液	--	--	13.61
Aluminum 铝箔	Al	7429-90-5	5.79
PVDF 聚偏氟乙烯	$(CH_2\text{-}CF_2)_n$	24937-79-9	0.58
Copper 铜箔	Cu	7440-50-8	9.53
SBR 丁苯橡胶	$C_{12}H_{14}$	9003-55-8	0.51
Polyethylene 聚乙烯	$(C_2H_4)n$	9002-88-4	0.05
Polypropylene 聚丙烯	$(C_3H_6)n$	9003-07-0	0.96

Section 3.Hazards Identification
危险性概述

Explosive risk 爆炸危险性	This article does not belong to the explosion dangerous goods 该物品不属于爆炸危险品
Flammable risk 易燃危险性	This article does not belong to the flammable material 该物品不属于易燃危险品
Oxidation risk 氧化危险性	This article does not belong to the oxidation of dangerous goods 该物品不属于氧化危险品
Toxic risk 毒害危险性	This article does not belong to the toxic dangerous goods 该物品不属于毒害危险品
Radioactive risk 放射危险性	This article does not belong to the radiation of dangerous goods 该物品不属于放射危险品
Mordant risk 腐蚀危险性	This article does not belong to the corrosion of dangerous goods 该物品不属于腐蚀危险品
Other risk 其他危险性	This article is the Lithium ion battery. 该物品为锂离子电池。

Section 4. First aid measures
急救措施

Eye: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

眼睛：万一接触，立即用大量的清水冲洗至少 15 分钟，翻起上下眼睑，直到化学的残留物消失为止，

迅速就医。

Skin: Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

皮肤：万一接触，用大量水冲洗至少 15 分钟，同时除去污染的衣物和鞋子，迅速就医。

Inhalation: Remove from exposure and move to fresh air immediately. Use oxygen if available.

吸入：立即从暴露处移至空气清新处，如果呼吸困难给予输氧，立即就医。

Ingestion: Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician

食入：饮用两杯牛奶或水。如果当事人仍然清晰可以采取催吐的方法，并且立即就医。

Section 5. Fire-fighting measures
消防措施

Flash Point: N/A.

燃点：不适用

Auto-Ignition Temperature: N/A.

自燃温度：不适用

Extinguishing Media: Water, CO2.

灭火介质：大量水（降温），二氧化碳

Special Fire-Fighting Procedures: Self-contained breathing apparatus.

特殊灭火程序：自给式呼吸器

Unusual Fire and Explosion Hazards: Cell may vent when subjected to excessive heat-exposing battery contents.

异常火灾或爆炸：当电芯暴露于过热的环境中时，安全阀可能会打开。

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

燃烧产生的危险物品：一氧化碳，二氧化碳，锂氧化物烟气

Section 6. Accidental release measures
泄露应急处理

Steps to be taken in case Material is Released or Spilled If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

为防止电池材料泄露或释放采取的措施如果电池内部材料泄露，试验人员应立刻撤离试验区直到烟气消散。将通风设备打开吹散危险性气体。用抹布擦净试验区，清除溢出的液体，将泄露电池放进塑料袋中，然后放进钢制容器。避免皮肤和眼睛接触或吸入有害气体。

Waste Disposal Method: It is recommended to discharge the battery to the end, to use up the metal

lithium inside the battery, and to bury the discharged battery in soil..

废弃物处置方法： 建议将电池完全放电，消耗电池内部的锂金属，并且深埋于土壤中。

Section 7. Handling and storage
操作处置和储存

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

禁止打开、毁坏或焚烧电池，因为电池有可能在这些处理过程中发生爆炸、破裂或泄露等事故。禁止将电池短路、过充、强制放电或扔入火中。禁止挤压刺穿电池或将电池浸入溶液中。

Precautions to be taken in handling and storing Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

操作处置和储存中的防范措施禁止物理或电滥用，禁止高温储存，最好将电池储存在阴凉、干燥、通风及温度变化较小的环境中。禁止将电池接触加热设备或将电池直接暴露与阳光中。

Other Precautions The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity

其他要注意的防范措施拆解、挤压、直接放入火中或高温条件下，电池可能发生爆炸和燃烧。禁止短接或将电池正负极错误的安装在设备中。

Section 8. **Exposure controls/personal protection**
接触控制/个人防护

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.

呼吸防护 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。

Ventilation Not necessary under conditions of normal use.

通风条件 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.

电池开阀试验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**
物理和化学特性

Appearance: Approximate Rice White Cuboid
外观：米白色近长方体

Odour: If leaking, smells of medical ether
气味： 泄漏时，有刺激性气味。

pH: Not applicable as supplied.
酸碱度：不适用

Flash Point: Not applicable unless individual components exposed.
闪点：针对单个组分暴露情况，其他不适用。

Flammability: Not applicable unless individual components exposed.
易燃度：针对单个组分暴露情况，其他不适用。

Relative density: Not applicable unless individual components exposed.
相对密度：针对单个组分暴露情况，其他不适用。

Solubility (water): Not applicable unless individual components exposed
溶解性（水溶性）：针对单个组分暴露情况，其他不适用。

Solubility (other): Not applicable unless individual components exposed.
溶解性（其他）：针对单个组分暴露情况，其他不适用

Section 10. **Stability and reactivity**
稳定性和反应活性

Stability: Product is stable under conditions described in Section 7.
稳定性：产品在第 7 节所述的条件下稳定。

Conditions to Avoid : Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble. Overcharge. Short circuit. Expose over a long period to humid conditions.
应避免的条件：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。

Materials to avoid: Oxidising agents, alkalis, water.
应避免的材料：氧化剂，碱，水。

Hazardous Decomposition Products : Toxic Fumes, and may form peroxides.
危险分解物：有毒烟雾，并可能形成过氧化物。

Hazardous Polymerization : N/A.
聚合危害：不适用

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, 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**
毒理学资料

Signs & symptoms: None, unless battery ruptures.
标志及症状：无，除非电池破裂。

In the event of exposure to internal contents, vapour 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的刺激性。

Inhalation: Lung irritant.

吸入：对肺有刺激性。

Skin contact: Skin irritant.

皮肤接触：对皮肤刺激性。

Eye contact: Eye irritant

眼睛接触：对眼睛有刺激性。

Ingestion: Poisoning if swallowed.

食入：吞下中毒。

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

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。

Section 12. **Ecological information**
生态学资料

Mammalian effects: None known at present.

对哺乳动物的影响：目前未知。

Eco-toxicity: None known at present.

生态毒性：目前未知。

Bioaccumulation potential: Slowly Bio-degradable

生物体内积累：慢慢地生物降解。

Environmental fate: None known environmental hazards at present.

环境危害：目前没有已知的环境危害。

Section 13. **Disposal consideration**
废弃处置

Do not incinerate, or subject cells to temperature in excess of 70°C, Such abuse can result in loss of seal leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

禁止焚烧，或使电池温度超过70°C，这种滥用可导致泄漏和/或电池爆炸。应按照相应的地方性法规处理。

Section 14. **Transport information**
运输信息

Label for conveyance: Lithium Battery Class 9 Hazard Label.

运输标签：锂电池九类危险品标签

UN Number: 3480

UN 编号：3480

Packaging Group: Class II

包装等级：II 级

Marine pollutant: No

海洋污染物：无

Proper Shipping name: Lithium Ion Batteries(Including Lithium Polymer Batteries)

正确的装运名称：锂离子电池(包括锂聚合物电池)

Transport information: Lithium ion battery is of a type proved to meet the Requirements of each test in the UN MANUALOF TESTS AND CRITERIA, Part Ⅲ, sub-section 38.3.

The lithium-ion battery with a watt-hour rating exceeding 100Wh or the cell with the watt-hour rating is exceeding 20Wh, The goods shall be compiled with the Packing Instruction P903 of IMDG CODE(Amdt.40-20)2020 Edition.

运输信息:锂离子电池已通过联合国《试验和标准手册》第Ⅲ部分 38.3 小节相应测试要求。

锂离子电池瓦时额定值超过 100Wh 或者锂离子电芯瓦时额定值超过 20Wh，货物运输应遵守 IMDG CODE(Amdt.40-20)2020 版包装导则 P903 的要求。

Section 15 **Regulation information**
法规信息

Law information

法律信息

《Dangerous Goods Regulations》

《危险物品规则》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《对危险货物运输的有关规定的建议》

《International Maritime Dangerous Goods》

《国际海运危险货物规则》

《Technical Instructions for the Safe Transport of Dangerous Goods》

《危险品安全运输技术指令》

《Classification and code of dangerous goods》

《危险货物分类和品名编号》

《Occupational Safety and Health Act》(OSHA)

《职业安全卫生法》

《Toxic Substance Control Act》(TSCA)

《有毒物质控制法》

《Consumer Product Safety Act》(CPSA)

《消费产品安全法》

《Federal Environmental Pollution Control Act》(FEPCA)

《联邦环境污染控制法》

《The Oil Pollution Act》(OPA)

《石油污染法案》

《Superfund Amendments and Reauthorization Act TitleⅢ (302/311/312/313)》(SARA)

《超级基金修正案和再授权法案Ⅲ(302/311/312/313)》

《Resource Conservation and Recovery Act》(RCRA)

《资源保护及恢复法案》

《Safety Drinking Water Act》(CWA)

《安全饮用水法》

《California Proposition 65》

《加州 65 提案》

《Code of Federal Regulations》(CFR)

《美国联邦法规》

In accordance with all Federal, State and local laws

根据所有联邦、州和地方法律。

Section 16 **Other information**

其他信息

The commissioner provides the composition information of batteries, and promises its integrity and accuracy. Users should read this file carefully, and use the batteries in correct method. Test Center of National Engineering Research Center of Advanced Energy Storage Materials Co., Ltd. doesn't assume responsibility for any damage or loss because of misuse of batteries.

该电池的成分信息由委托方提供并承诺其完整性和准确性。用户应仔细阅读此文件，并按照正确的方法使用电池，如因电池使用不当造成的损害或损失，先进储能材料国家工程研究中心有限责任公司检测中心（CES）不承担任何责任。

-- End of Report --