

Material Safety Data Sheet

材料安全数据表

Name of Products: Energy Storage Battery
产品名称: 储能电池
Model/type reference: AZZURRO HV ZBT 5K
型号:
Applicant: Zucchetti Centro Sistemi SpA
申请商
Address of Applicant: Via Lungamo 305/A 52028 Terranuova Bracioli (AR), Italy
申请商地址:
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Section 1– Identification of the product and supplier**第一部分–产品及供应商标识**

Product Name: Energy Storage Battery

产品名称: 储能电池

Model No./型号: AZZURRO HV ZBT 5K

Nominal Voltage/标称电压: 51.2V

Rated Capacity/额定容量: 100Ah, 5120Wh

Manufacturer's / Supplier Name: Guangdong Sofar Smart Solar Technology Co., Ltd.

制造商/供应商: 广东首航智慧新能源科技有限公司

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Section 2–Hazards Identification**第二部分–危害识别**

Preparation hazards and classification 危害分类	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危害的
Apperance, Color, and Odor 外观、颜色及气味	Solid object with no odor, no color. 无色、无味、固态
Primary Route(s) of Exposure 主要暴露途径	These chemicals are contained in a sealed enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact 这些化学药品装在密封的容器里。暴露的风险只有在电池受到机械、加热或滥用电时危及外壳才会发生。如果发生这种情况, 接触电解液所包含的可能发生吸入、食入、皮肤接触、眼睛接触。
Potential Health Effects 潜在的健康影响	ACUTE (short term): See Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns. 接触控制请看第 8 章节。在这种情况下, 电池破裂, 电池中包含的电解液具有腐蚀性, 可以引起烧伤。 Inhalation: Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation. 吸入: 从密封电池吸入材料不是预期的接触途径。破裂电池散发出来的气雾会引起呼吸道刺激。 Ingestion: Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

	食入：从密封电池中吞咽材料并不是一种预期的接触途径。吞咽破裂电池的组成成分可以引起嘴，食道和胃肠道严重的化学烧伤。 Skin: Contact between the battery and skin will not cause any harm. Skin contact with contents of an open battery can cause severe irritation or burns to the skin. 皮肤：完整的电池与皮肤接触不会造成任何伤害。皮肤接触了破裂电池内部物质可能引起严重的刺激或烧伤皮肤。 Eye: Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open battery can cause severe irritation or burns to the eye. 眼睛：完整的电池与眼睛之间的接触不会造成任何伤害。眼睛接触了破裂电池内部物质可能引起严重的刺激或烧伤眼睛。 CHRONIC (long term): See Section 11 for additional toxicological data 慢性（长期）：请看第 11 章节
Medical Conditions Aggravated by Exposure 身体状况因暴露而恶化	Not applicable 不适用
Reported as carcinogen 致癌物质	Not applicable 不适用

Section 3 – Composition/Information on Ingredients

第三部分-主要成分/组成信息

Information about the chemical nature of product/产品的化学性质信息:

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）
Graphite 石墨	7-25	7782-42-5
Lithium iron Phosphate 磷酸锂铁	15-40	15365-14-7
Poly(vinylidene fluoride-co-hexafluoro-propylene)	3-15	N/A
Lithium hexafluorophosphate 六氟磷酸锂	0-5	21324 40-3
Carbon Black 炭黑	0-2	1333-86-4
Other 其它	Remainder	N/A

Labeling according to EC directives.

标签需根据 EC 指令

No symbol and risk phrase are required.

不需要任何符号和风险短语。

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 applicable/不适用

Section 4 – First-aid Measures

第四部分-急救措施

Inhalation 吸入	If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice. 如果吸入了破裂电池内部物质, 移除污染源或将受害者移至新鲜空气处, 寻求医生建议。
Ingestion 食入	If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility. 如果食入了破裂电池内部物质, 受害者正在迅速失去意识, 或昏迷或抽搐, 千万不要给他们任何食物。让患者用水彻底冲洗口腔。不要催吐。让患者喝 60 - 240 毫升(2-8 盎司)的水。如果呕吐是自然发生的, 请让患者身体前倾, 以减少误吸的风险。让患者再次用水漱口。迅速将受害者送往急救中心。
Skin contact 皮肤接触	If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard. 如果接触到破裂电池的内部物质, 应尽快去除被污染的衣服、鞋子和皮革制品。立即用温和的流动水冲洗至少 30 分钟。如果刺激或疼痛持续, 立即就医。衣物、鞋及皮具必须彻底去污, 方可再用或弃置。
Eye contact 眼睛接触	If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility. 如果眼睛接触了破裂电池内部物质, 立即用温水轻轻流动的水将被污染的眼睛冲洗至少 30 分钟, 同时保持眼睑打开。一旦有了中性盐水溶液, 可以立即使用。如有必要, 在运送到急救设施期间继续冲洗。注意不要将受污染的水冲洗到未受影响的眼睛或脸上。迅速将受害者送往急救中心。

Section 5 – Fire-fighting Measures

第五部分-消防措施

Flammable Properties 易燃的特性	In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.
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	在电池已经破裂情况下，电池中的电解液中是易燃的。像任何密封容器一样，电池暴露在过热环境下可能会破裂;这可能导致易燃或腐蚀性材料的释放。
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Suitable extinguishing Media 合适的灭火媒介	Use extinguishing media suitable for the materials that are burning. 使用适合于正在燃烧的材料灭火介质。
Unsuitable extinguishing Media 不合适的灭火媒介	Not available 不适用
Explosion Data 爆炸系数	Sensitivity to Mechanical Impact: This may result in rupture in extreme cases 对机械冲击的敏感性：在极端情况下，这可能导致破裂 Sensitivity to Static Discharge: Not Applicable 对静电放电的敏感性：不适用
Specific Hazards arising from the chemical 由化学物质引起的特定危害	Fires involving Battery are controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire 涉及电池的火灾是用水控制的。当使用水时，然而可能会产生氢气。在密闭空间，氢气能形成爆炸性混合物。在这种情况下，建议使用窒息剂灭火
Protective Equipment and precautions for firefighters 消防队员的防护设备和注意事项	As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus(SCBA) with full protective gear. 如果发生火灾，撤离该区域并在安全距离内灭火。戴上需要压力的自给式呼吸器和全套防护装备。在有保护的地方或安全的距离灭火。使用NIOSH/MSHA认可的全面自给式呼吸器(SCBA)和全套防护装备。
NFPA 消防协会	Health: 0 Flammability: 0 Instability: 0 健康：0 易燃性：0 不稳定性：0

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. 在清理工作完成之前, 禁止任何人进入该区域。请勿触摸泄露的材料。穿戴 足够的个人防护装备, 如第 8 章节所示。
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. 处于安全, 阻止泄露, 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(干燥的沙子或泥土)吸收溢出的材料。将被污染的吸收剂舀到 可接受的废物容器中。收集所有被污染的吸收剂, 并按照第 13 章节的说明 处理。用清洁剂和水擦洗该区域;收集所有被污染的洗涤水, 以适当的方式处 理。

Section 7 – Handling and Storage

第七部分-操作处置与存储

Handling 操作	Don't handle Battery with metalwork. Do not open, disassemble, crush or burn battery. Ensure good ventilation/exhaustion at the workplace. Prevent formation of dust. Information about protection against explosions and fires: Keep ignition sources away- Do not smoke. 请勿用金属制品处理电池。请勿打开、分解、挤压或燃烧电池。确保工作场 所通风良好。防止灰尘的形成。关于防止爆炸和火灾的信息: 远离点火源-不 要吸烟。
Storage 存储	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。 3 months: -10°C~+40°C, 45 to 85%RH 3 个月: -10°C~+40°C, 相对湿度 45%-85%RH And recommended at 0°C~+35°C for long period storage. 长期存储在 0°C~+35°C 环境下 The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. 存储后交付状态(满电时容量为 50%)的容量保持率为 80% 以上 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. 请勿将电池随意存放在盒子或抽屉中, 以免电池之间相互短路或被其他金属物体短路。 Keep out of reach of children. 请置于儿童接触不到的地方。 Do not expose Battery to heat or fire. Avoid storage in direct sunlight. 请勿将电池置于高温或火中。避免储存在阳光直射的地方。 Do not store together with oxidizing and acidic materials. 请勿与氧化性和酸性物质存放。
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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, 以控制灰尘, 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。储存在阴凉、干燥的地方。
Personal Protective Equipment 个人防护装备	Respiratory Protection: Not necessary under normal conditions. 呼吸保护: 正常情况下不需要。 Skin and body Protection: Not necessary under normal conditions, Wear neoprene or nitrile rubber gloves if handling an open or leaking battery. 皮肤和身体的保护: 正常情况下不需要, 处理打开或漏水的电池时, 应戴氯丁橡胶或丁腈橡胶手套。 Hand protection: Wear neoprene or natural rubber material gloves if handling an open or leaking battery. 手保护: 在处理打开或泄漏的电池时, 戴氯丁橡胶或天然橡胶材料的手套。 Eye Protection: Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery. 眼睛保护: 正常情况下不需要, 如果处理打开或泄漏的电池, 请佩戴安全眼镜。
Other Protective Equipment 其他防护设备	Have a safety shower and eye wash fountain readily available in the immediate work area. 在直接的工作区域有一个安全的淋浴和洗眼喷泉。
Hygiene Measures 卫生措施	Do not eat, drink, or smoke in work area. Maintain good housekeeping. 请勿在工作区域内进食、饮水或吸烟。维护好管家。

Section 9 – Physical and Chemical Properties

第9部分-理化特性

Physical State 物理状态	Form: Solid 形态: 固体
	Color: Gray 颜色: 灰色

	Odor: Odorless 气味: 无气味
Change in condition 变化条件:	Not available. 无数据可提供
pH, with indication of the concentration pH,有浓度指示	Not applicable 不适用
Melting point/freezing point 熔点/凝固点	Not available. 无数据可提供
Boiling Point, initial boiling point and Boiling range: 沸点、初沸点	Not available. 无数据可提供
Flash Point 闪点	Not available. 无数据可提供
Upper/lower flammability or explosive limits 上/下燃烧或爆炸限值	Not available. 无数据可提供
Vapor Pressure: 蒸汽压	Not applicable 不适用
Vapor Density: (Air = 1) 蒸汽密度: (空气=1)	Not applicable 不适用
Density/relative density 密度/相对密度	Not 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	Not available. 无数据可提供
Auto-ignition temperature 自然温度	130°C
Decomposition temperature 分解温度	Not available. 无数据可提供
Odour threshold 溴阈	Not available. 无数据可提供
Evaporation rate 蒸发速率	Not available. 无数据可提供
Flammability (soil, gas) 易燃性(土壤, 其他)	Not available. 无数据可提供
Viscosity 粘度	Not applicable 不适用

Section 10 – Stability and Reactivity

第十部分-稳定性和反应性

Stability 稳定性	The product is stable under normal conditions. 该产品在正常条件下是稳定的。
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Conditions to Avoid (e.g. static discharge, shock or vibration) 应避免的条件(如静电放电、冲击或振动)	Do not subject Battery to mechanical shock. Vibration encountered during transportation does not cause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse. 请勿对电池进行机械冲击。 运输过程中遇到的振动不会引起泄漏、火灾或爆炸。 不要拆解、挤压、短路或安装错误的极性。避免机械或电气滥用。
Incompatible Materials 异种材料	Not Available 无数据可提供
Hazardous Decomposition Products 危害分解物	This material may release toxic fumes if burned or exposed to fire 这种材料如果被燃烧或暴露于火中，可能会释放出有毒气体
Possibility of Hazardous Reaction 危险反应的可能性	Not Available 无数据可提供

Section 11 – Toxicological Information

第十一部分-毒理学信息

Irritation 刺激	Risk of irritation occurs only if the 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. 只有当电芯是受到机械，加热或电气滥用达到刺激点的风险。如果发生这种情况，皮肤、眼睛和呼吸道可能会受到刺激。
Sensitization 敏化作用	Not Available 无数据可提供
Neurological Effects 神经系统的影响	Not Available 无数据可提供
Teratogenicity 致畸性	Not Available 无数据可提供
Reproductive Toxicity 再生毒性	Not Available 无数据可提供
Mutagenicity (Genetic Effects) 诱变(遗传效应)	Not Available 无数据可提供
Toxicologically Synergistic Materials 协同材料毒理学	Not Available 无数据可提供

Section 12 – Ecological Information

第十二部分-生态学信息

General note: 通用信息	Water hazard class 1(Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
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	水危险等级 1(自评):对水有轻微危险。 不允许未经稀释的产品或大量的产品进入地下水、水道或污水系统。
Anticipated behavior of a chemical product in environment/possible environmental impacted/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	Not Available 无数据可提供
Mobility in soil 土壤中移动性	Not Available 无数据可提供
Persistence and Degradability 持久性和降解性	Not Available 无数据可提供
Bioaccumulation potential 生物体内积累的潜力	Not Available 无数据可提供
Other Adverse Effects 其他不良反应	Not Available 无数据可提供

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

Product disposal recommendation 产品处理建议	Observe local, state and federal laws and regulations. 遵守当地、州和联邦法律法规。
Packaging disposal recommendation 包装处理建议	Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't disassembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations. 废弃的电池可能引起火灾, 请用胶带将电池端子绝缘。请勿拆卸电池。完全卸除容器(无泪滴, 无粉歇, 刮拭小心)。容器可以回收或重复使用。遵守当地、州和联邦的法律法规

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

Label for conveyance 运输标签	Miscellaneous Lithium BATT 杂项锂电池
UN number 联合国货物编码	UN3480 or UN3481
Proper shipping name 运输名称	1) Lithium ion batteries; 2) Lithium ion batteries packed with equipment; 3) Lithium ion batteries contained in equipment. 1) 锂离子电池单独运输; 2) 锂离子电池和设备包装在一起;

	3) 锂离子电池内置于设备中
Packing Group 包装类别	N/A 不适用
EmS No. Ems 编号	F-A, S-I
Marine pollution 海洋污染	No 无
ICAO/IATA 国际民间航空组织/国际航空运输协会	Can be shipped by air in accordance with international Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA) DGR Manual 64 th Packing Instruction Section I (or Section IA) of Packing Instruction 965~967 for transportation. 可根据民用航空组织 (ICAO), TI 或国际航空运输协会 (IATA) DGR 手册 64 版本中 PI965~967 包装说明 Section I (或 Section IA) 的规定进行空运。
IMDG CODE 国际海运危险货物规则	Shipping may be done in accordance with the IMDG CODE (Amdt 40-20) Edition. 可根据 IMDG CODE(Amdt 40-20)版的相关规定进行海运。
DOT 美国运输部	Other requirements for the US Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185. 美国运输部 (DOT) 有害物质规则 C 分章节中的其他规定, 运输符合要求 49 CFR 173.185。
ADR/ADN 欧洲国际陆运危险货物协定/ 关于陆水道国际运输危险货物的欧洲协定	Transport Requirements for United Nations Economic Commission for Europe (UNECE) ADR/ADN, Applicable as from 1 January 2019. 自 2019 年 1 月 1 日起需符合联合国欧洲经济委员会 (UNECE) ADR/ADN 的运输要求。
In addition, to be permitted in transport each lithium cell and battery types must have passed the applicable tests set out in Subsection 38.3 of the UN Manual of Tests and Criteria. 此外每个电芯和电池类型都必须通过联合国《关于危险货物运输的建议书试验和标准手册》第 38.3 章节规定的适用测试。	

Section 15 – Regulation Information

第十五部分-法规信息

Law information:

法律信息:

《Dangerous Goods Regulations》

《危险货物规则》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《关于危险货物运输的建议书规章范本》

《Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria》

《关于危险货物运输的建议书试验和标准手册》

《International Maritime Dangerous Goods》

《国际海运危险货物规则》

《Technical Instructions for the Safe Transport of Dangerous Goods》

《危险货物安全运输技术指南》
《Classification and code of dangerous goods》
《危险货物分类和品名编码》
《Occupational Safety and Health Act》(OSHA)
《职业安全与健康法》(OSHA)
《Toxic Substance Control Act》(TSCA)
《有毒物质控制法》(TSCA)
《Consumer Product Safety Act》(CPSA)
《消费品安全法》(CPSA)
《Federal Environmental Pollution Control Act》(FEPCA)
《联邦环境污染控制法》(FEPCA)
《Resource Conservation and Recovery Act》(RCRA)
《资源保护与恢复法案》(RCRA)

In accordance with all Federal, State and local laws.

符合所有联邦，州和地方法律。

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, Dongguan Lepont Testing Service Co., Ltd. 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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*****End of report/报告结束*****