安全技术说明书

Safety Data Sheet (SDS)

产品名称 **Goods Name**	:	磷酸铁锂电池 **Lithium Iron Phosphate Battery**
型号 **Model Name**	:	**FLH48314UMG1**
委托单位 **Applicant**	:	广州菲利斯太阳能科技有限公司 **Guangzhou Felicity Solar Technology Co.,Ltd.**
报告编号 **Report Number**	:	**KS2605S2589B04**
生效日期 **Effective Date**	:	**June 02, 2026**

（制作：绞雄凤）　　（批准：杨龙）

Written by: 绞雄凤　　**Approved by:** 杨龙

广东科正技术服务有限公司

KSIGN(Guangdong) Testing Co., Ltd.

安全技术说明书
Safety Data Sheet (SDS)

ST/SG/AC.10/30/Rev.11 (GHS Rev. 11, 2025)

Report No.: KS2605S2589B04

第一部分：物质或混合物和供应商标识
Section 1：Substance/Mixture and Supplier Identification

1.1 产品标识/Product identifier

产品名称 Product Name	磷酸铁锂电池(型号: FLH48314UMG1) Lithium Iron Phosphate Battery (Model: FLH48314UMG1)
产品描述 Product Description	额定：Rated: 51.2V, 314Ah, 16.07kWh 重量：Weight: Appr: 124.0kg 尺寸：Dimensions: 834.5*525.4*260.0 (mm)

1.2 产品的推荐用途或预期限制用途/The recommended or intended use of the Product

建议用途 Recommended Use	用于工业或商业储能应用 Used for industrial or commercial Energy storage applications
限制用途 Restrictions Use	无相关资料 No information available

1.3 供应商信息/Supplier's details

生产工厂 Factory	广州菲利斯太阳能科技有限公司 Guangzhou Felicity Solar Technology Co.,Ltd.
地址 Address	广州市白云 区江高镇白云1号硬科技产业园 No.1 Hard Technology Industrial Park, Jianggao Town, Baiyun District, Guangzhou, Guangdong, P.R.China
制造商 Manufacturer	广州菲利斯太阳能科技有限公司 Guangzhou Felicity Solar Technology Co.,Ltd.
地址 Address	广州市白云区人和镇东华华业路 2 号、4 号、6 号、8 号、10 号、12 号（空港白云） (Airport Baiyun)No.2,4,6,8,10 and 12 Donghua Huaye Road, Renhe Town, Baiyun District, Guangzhou, Guangdong, P.R.China
电话 Telephone	+86-13790821370
传真 Fax	/
网址 Website	https://www.felicitysolar.com/
邮箱 E-mail	chenyue@felicitysolar.com
紧急电话 Emergency Telephone	+86-13790821370

第二部分：危险标识
Section 2：Hazards Identification

2.1 产品分类/Classification of the Product

该产品不在 GHS 法规第 2 部分：物理危害、第 3 部分：健康危害、第 4 部分：环境危害的分类中，不涉及相关的 GHS 标签信息。

This product is not classified under GHS Part 2: Physical Hazards, Part 3: Health Hazards, Part 4: Environmental Hazards and does not involve relevant GHS label information.

2.2 其他危害描述/ Other Hazard description

不当的行为可能导致的危害 Possible hazards caused by improper behavior	正常条件下按照制造商的使用说明书进行操作和使用不会产生危害，如违规滥用，会导致产品出现过充、过放、过温等情况，可能会引起电池泄露、热失控、起火或爆炸风险。 Under normal conditions, operating and using according to the manufacturer's instructions will not cause harm. However, violations and misuse may lead to overcharging, overdischarging, overheating, and other issues with the product, which may cause battery leakage, thermal runaway, fire or explosion risks.

第三部分：成分/组成信息
Section 3：Composition/Information on Ingredients

纯品 ☐ 混合物 ☒
Pure chemical ☐ Mixture ☒

描述 Description	化学名称 Chemical name	CAS号 CAS No.	重量含量（%） Weight-%
内部电芯成分 Internal cell composition	磷酸铁锂 Lithium Iron Phosphate	15365-14-7	36.8
	碳 Carbon	7440-44-0	1
	铝 Aluminum	7429-90-5	11.4
	铜 Copper	7440-50-8	6.5
	聚乙烯 Polyethylene	9002-88-4	1.7
	聚偏二氟乙烯 Polyvinylidene Fluoride (PVDF)	24937-79-9	0.1
	石墨 Graphite	7782-42-5	18.9
	聚苯乙烯-丁二烯橡胶 Polymerized Styrene Butadiene Rubber (SBR)	9003-55-8	0.4
	羧甲基纤维素 Carboxymethyi cellulose	9004-32-4	0.2
	碳酸乙烯酯 Ethylene carbonate	96-49-1	7
	碳酸二甲酯 Dimethyl carbonate	616-38-6	8
	碳酸甲乙酯 Ethyl Methyl Carbonate	623-53-0	8

第四部分：急救措施
Section 4：First aid measures

4.1 急救措施的描述/Description of first aid measures

正常条件下，人体直接接触锂离子电池不会产生危害。只有在电池泄漏的情况下，如果身体部位接触到泄漏物质，应采取以下措施：

Under normal conditions, direct contact with lithium-ion batteries by the human body does not pose any harm. Only in the event of battery leakage, if body parts come into contact with the leaked substance, the following measures should be taken:

吸入 Inhalation	如果吸入，迅速脱离现场至空气新鲜处，如果呼吸困难，应供给氧气；如果停止呼吸，应立即进行人工呼吸并呼叫救援。 If inhaled, quickly leave the scene and move to a place with fresh air. If breathing is difficult, oxygen should be supplied; If breathing stops, artificial respiration should be performed immediately and rescue should be called.
食入 Ingestion	立即用清水冲洗口腔，及时就医。 Immediately rinse your mouth with clean water and seek medical attention promptly.
眼睛接触 Eye contact	提起眼皮用流动的清水冲洗至少15 分钟，若仍有刺激感，立即就医。 Lift the eyelids and rinse with flowing water for at least 15 minutes. If irritation persists, seek medical attention immediately.
皮肤接触 Skin contact	皮肤接触后马上用肥皂和大量清水冲洗皮肤。 Immediately rinse the skin with soap and plenty of water after skin contact.

第五部分：消防措施
Section 5：Fire-fighting Measures

危险特性 Hazardous characteristics	在火灾时会释放可燃气体、有害浓烟、有害气体、高温蒸汽。 During a fire, flammable gases, harmful smoke, harmful gases, and high-temperature steam will be released.
有害燃烧产物 Harmful combustion products	一氧化碳、二氧化碳、碳氢混合气体、氢气、HF等。 CO, CO_2, Hydrocarbon mixture gas, H_2, HF,etc.
灭火方法及灭火剂 Fire extinguishing methods and extinguishing agents	建议使用消防栓喷水灭火，或者用水基型灭火器灭火。 It is recommended to use fire hydrants to spray water or water-based fire extinguishers to extinguish the fire.
对消防人员的建议 Suggestions for firefighters	消防人员应佩戴自给式呼吸器，穿戴防爆头盔、防爆背心、耐高温的消防服。灭火的关键是用大量的水来降温灭火防止发生热失控扩散，以及现场保持通风排气防止出现爆燃。 Firefighters should wear self-contained breathing apparatus, explosion-proof helmets, explosion-proof vests, and high-temperature resistant firefighting suits. The key to extinguishing fires is to use a large amount of water to cool down and prevent thermal runaway and diffusion, as well as to maintain ventilation and exhaust on site to prevent explosions.

第六部分：泄漏应急处理
Section 6：Accidental Release Measures

6.1 个人预防措施、防护装备和应急程序
Personal precautions, protective equipment and emergency procedures

针对非应急人员 For non-emergency personnel	第一时间关闭现场设施的电源，打开现场排风系统或门窗保持通风，启动手动声光报警系统并立即撤离现场，撤离过程应做好呼吸防护。 Immediately turn off the power supply of the on-site facilities, turn on the on-site exhaust system or doors and windows to maintain ventilation, activate the manual sound and light alarm system, and evacuate the site immediately. Respiratory protection should be taken during the evacuation process.
针对应急人员 For emergency personnel	应急人员应佩戴自给式呼吸器或防颗粒物+活性炭防酸性气体的复合型防护口罩、耐高温消防服、耐高温手套、防爆头盔、防爆背心进场，优先建议使用消防栓水枪灭火或者水基型灭火器灭火。 Emergency personnel should wear self-contained breathing apparatus or composite protective masks that prevent particulate matter, activated carbon, and acidic gases, high-temperature resistant firefighting suits, high-temperature resistant gloves, explosion-proof helmets, and explosion-proof vests when entering the site. It is recommended to use fire hydrants, water guns, or water-based fire extinguishers to extinguish the fire first.

6.2 环境保护措施/Environmental precautions

应防止泄漏的电池、电池泄漏物质直接排放到下水道、垃圾桶，应联系专业的回收公司进行回收处理。
Batteries and leaked substances should be prevented from being directly discharged into sewers and garbage bins. Professional recycling companies should be contacted for recycling and disposal.

6.3 控制和清理的方法和材料/Methods and materials for containment and cleaning up

第一时间将出现泄漏的电池泡水处理，待浸泡24h后联系专业的回收公司进行回收处理。
Immediately soak the leaking battery in water and contact a professional recycling company for recycling after soaking for 24 hours.
针对泄漏出的残留物，建议用砂土吸附或用水浸泡处理。
For the leaked residue, it is recommended to use sand to adsorb or soak it in water for treatment.

第七部分：操作处置和储存
Section 7：Handling and Storage

7.1 安全操作注意事项/Precautions for safe handling

切勿将电池的正负极端子短路、反接，输入和输出接口混用。
Do not short-circuit or reverse the positive and negative terminals of the battery, and do not mix the input and output interfaces.
切勿将电池投入火中或高温环境下。
Do not put the battery into fire or high temperature environment.
切勿强制破开、刺穿电池外壳。
Do not forcefully break or puncture the battery casing.
切勿让电池遭受到机械撞击、冲击、跌落。
Do not expose the battery to mechanical impact, shock, or drop.
切勿超出制造商说明书规定的条件进行滥用。
Do not abuse beyond the conditions specified in the manufacturer's instructions.

7.2 安全储存条件/Conditions for safe storage

应按照制造商的使用说明书中要求进行储存和使用，远离明火、高压强电，储存环境应优先保持通风及阴凉。
Storage and use should be carried out in accordance with the manufacturer's instructions, away from open flames and high voltage electricity, and the storage environment should prioritize ventilation and coolness.

第八部分：接触控制和个人防护
Section 8：Exposure control/Personal Protection

8.1 控制参数/Control parameters

职业接触限值 Occupational Exposure Limit, OEL	无相关规定 No relevant regulations
生物限值 Biological limit values	无相关规定 No relevant regulations
预测的无效应浓度 Predicted No Effect Concentration (PNEC)	无相关规定 No relevant regulations
衍生的无效应水平 Derived No effect level, DNEL	无相关规定 No relevant regulations

8.2 工程控制/ Engineering controls

操作未破损的电池，没有工程控制的要求。对于破损的电池，个人防护用品应包括防护手套、口罩和安全护目镜。
There is no requirement for engineering control when operating undamaged batteries. For damaged batteries, personal protective equipment should include protective gloves, protective masks, and safety goggles.
现场应急处置控制应保持持续通风，配备必要的排风系统、消防应急处置物资（例如灭火毯、消防水枪、消防水桶、水基型灭火器、耐高温消防服、防爆头盔、防爆背心等），还应设置消防应急撤离通道。
On site emergency response control should maintain continuous ventilation, equipped with necessary exhaust systems, fire emergency response materials (such as fire blankets, fire water guns, fire water buckets, water-based fire extinguishers, high-temperature resistant firefighting suits, explosion-proof helmets, explosion-proof vests, etc.), and also set up fire emergency evacuation routes.

8.3 个人防护装备/ Personal protective equipment

眼睛/面部防护 Eye/face protection	电池正常条件下，无需做相关防护。当出现异常时，必须佩戴耐高温的护目镜、耐高温的面罩。 Under normal conditions, no relevant protection is required for the battery. When abnormalities occur, it is necessary to wear heat-resistant goggles and face shields.
手部防护 Hand protection	电池正常条件下，无需做相关防护。当出现异常时，必须戴耐酸碱的化学防护手套。 Under normal conditions, no relevant protection is required for the battery. When abnormalities occur, acid and alkali resistant chemical protective gloves must be worn.
呼吸系统防护 Respiratory protection	电池正常条件下，无需做相关防护。当出现异常时，必须佩戴防颗粒物+活性炭防酸性气体的复合型防护口罩。 Under normal conditions, no relevant protection is required for the battery. When abnormalities occur, it is necessary to wear a composite protective mask that prevents particulate matter and activated carbon from acidic gases.
皮肤和身体防护 Skin and body protection	电池正常条件下，无需做相关防护。当出现异常时，必须穿戴耐高温的消防服。 Under normal conditions, no relevant protection is required for the battery. When abnormalities occur, it is necessary to wear heat-resistant firefighting clothing.

第九部分：理化特性
Section 9：Physical and chemical properties

9.1 理化特性/Information on basic physical and chemical properties

物理状态 Physical state	固体 Solid
颜色/形状 Color/Shape	白色近长方体 White almost cuboid
气味 Odour	无气味 Odorless
熔点/冰点 Melting point/freezing point	无相关资料 No information available
沸点/沸腾范围 Boiling Point, initial boiling point and Boiling range	不适用 Not applicable
可燃性 Flammability	无相关资料 No information available
可燃性或爆炸性上/下限 Upper/lower flammability or explosive limits	无相关资料 No information available
闪点 Flash Point	不适用 Not applicable
自燃温度 Auto-ignition temperature	不适用 Not applicable
分解温度 Decomposition temperature	不适用 Not applicable
pH	不适用 Not applicable
运动黏度 Kinematic viscosity	不适用 Not applicable
溶解性 Solubility	不适用 Not applicable
正辛醇/水分配系数（对数值） Partition coefficient n-octanol/water(log value)	不适用 Not applicable
蒸汽压 Vapor pressure	不适用 Not applicable
密度和/或相对密度 Density and/orrelative density	不适用 Not applicable
相对蒸气密度 Relative vapour density	不适用 Not applicable
颗粒特性 Particle characteristics	无相关资料 No information available

第十部分：稳定性和反应活性
Section 10：Stability and reactivity

稳定性：常温常压下稳定
Stability: Stable under normal temperatures and pressures.
禁配物：氧化剂
Incompatibility: oxidizing agents
避免接触的条件：热和明火、短路和水
Conditions to Avoid: Heat and open flame, short circuit, and water.
聚合危害：不会发生
Hazardous polymerization: Will not occur
分解产物：一氧化碳、二氧化碳、碳氢混合气体、氢气、HF等。
Decomposition Products: CO, CO_2, Hydrocarbon mixture gas, H_2, HF, etc.

第十一部分：毒理学资料
Section 11: Toxicological Information

11.1 危险类别信息/Information on hazard classes

急毒性	不适用
Acute toxicity	Not applicable
皮肤腐蚀/刺激	只有当电池破裂的时候，泄漏的电解液蒸汽或烟雾对皮肤有腐蚀和刺激。
Skin corrosion/irritation	Only when the battery ruptures, the leaked electrolyte vapor or smoke from a ruptured battery can corrode and irritate the skin.
严重眼损伤/眼睛刺激	只有当电池破裂的时候，泄漏的电解液蒸汽或烟雾对皮肤有腐蚀和刺激。
Serious eye damage/eye irritation	Only when the battery ruptures, the leaked electrolyte vapor or smoke can cause damage and irritation to the eyes.
致敏作用	不适用
Sensitization	Not applicable
生殖细胞突变性	不适用
Germ cell mutagenicity	Not applicable
致癌性	不适用
Carcinogenicity	Not applicable
生殖毒性	不适用
Reproductive toxicity	Not applicable
特定目标器官毒性-单次接触	不适用
STOT -single exposure	Not applicable
特定目标器官毒性-反复接触	不适用
STOT -repeated exposure	Not applicable
吸入性危害	不适用
Aspiration hazard	Not applicable

第十二部分：生态学资料
Section 12: Ecological Information

水毒性	无相关资料
Toxicity	No information available
持久性和降解性	无相关资料
Persistence and degradability	No information available
生物积累的潜在可能性	无相关资料
Bioaccumulative potential	No information available
土壤中移动性	无相关资料
Mobility in soil	No information available

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第十三部分：废弃处置
Section 13: Waste Disposal

废弃处置方法 Waste Disposal methods	建议遵照国家及地区法规处置或回收。 Suggest disposing or recycling in accordance with national and regional regulations
废弃处理注意事项 Attention for waste disposal	废电池不能被当作普通垃圾，不能扔进火中或置于高温下，不能解体、刺穿、粉碎或类似的处理，最好的办法是回收利用。 Waste batteries cannot be treated as ordinary garbage, cannot be thrown into fire or placed at high temperatures, cannot be disassembled, punctured, crushed, or processed similarly. The best way is to recycle and reuse them.

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

	空运 ICAO/IATA (DGR 67th)	海运 IMDG-CODE (Amdt 42-24)	公路 ADR (ADR 2025)	铁路 RID (RID 2025)
UN编号 UN number	UN 3480	UN 3480	UN 3480	UN 3480
UN运输专用名称 UN proper shipping name	UN 3480	锂离子电池(包括锂离子聚合物电池) Lithium ion batteries (including lithium ion polymer batteries)		
运输危害分类 Transport hazard class(es)	第9类			
EmS编号 EmS No	F-A, S-I			
环境危害 Environmental hazards	非海洋污染物 Non marine pollutants			
用户特别注意事项 Special precautions for user	运输前确保电池的电量不能满电，一般控制在30%SOC以内或遵循国家或地方法规相关要求。 Before transportation, ensure that the battery is not fully charged, generally controlled within 30% SOC or in accordance with relevant national or local regulations. 运输前确保电池处于关机、断电或断路状态，确保电池正负极端子有做防短路的绝缘处理。 Before transportation, ensure that the battery is turned off, powered off, or disconnected, and ensure that the positive and negative terminals of the battery are insulated to prevent short circuits. 运输过程如出现异味、鼓包、漏液、冒烟，请立即将异常电池安全隔离并现场准备必要的消防处置措施，尽快联系厂家寻求处置方案。 If there is any odor, swelling, leakage, or smoking during transportation, please immediately isolate the abnormal battery safely and prepare necessary fire-fighting measures on site. Contact the manufacturer as soon as possible to seek a disposal plan. 运输前每一个电池设计须通过《联合国试验和标准手册》第38.3节所要求的测试。UN38.3报告编号：KS2605S2589B01. Before transportation, each battery design must pass the tests required by Section 38.3 of the UN Manual of Tests and Criteria. UN38.3 Report Number: KS2605S2589B01.			

第十五部分：法规信息
Section 15: Regulatory Information

法规信息Regulatory information:

国际民用航空协会《危险品规则》(IATA-DGR)
International Civil Aviation Association 《Dangerous Goods Regulation》(IATA-DGR)
《危险货物运输的有关规定的建议》(TDG)
《Recommendation on the Transport of Dangerous Goods Model Regulations》(TDG)
《国际海运危险货物规则》(IMDG-CODE)
《International Maritime Dangerous Goods》(IMDG-CODE)
《国际公路运输危险货物协定》(ADR)
《Agreement on the International Carriage of Dangerous Goods by Road》(ADR)
《国际铁路运输危险货物规则》 (RID)
《International Railway Transport Dangerous Goods Regulations》 (RID)
《国际内河运输危险货物协定》（ADN）
《Agreement on the International Carriage of Dangerous Goods by Inland Waters》 (ADN)
《关于危险货物运输的建议书试验和标准手册》
《Recommendations on the Transport of Dangerous Goods-Manual of Tests and Criteria》
《危险货物安全运输技术指南》
《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III(302/311/312/313)》
《Superfund Amendments and Reauthorization Act Title III (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)

第十六部分：其他信息 Section 16：Other Information	
参考文献 Reference	中华人民共和国国家标准（GB/T 16483-2008）化学品安全技术说明书内容和项目顺序、中华人民共和国国家标准（GB/T 17519-2013）化学品安全技术说明书编写指南。 National standard of People's Republic of China. (GB/T 16483-2008) Safety data sheet for chemical products-Content and order of sections, National standard of People's Republic of China. (GB/T 17519-2013) Guidance on the compilation of safety data sheet for chemical products.
报告修订历史 Report Revision History	初版发行 First Edition
报告模板版本 Report Template Version	Version：SDS-R8，creation date: 2026.
样品照片 Sample photo	 
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