化学品安全技术说明书（MSDS）

1. 化学品及企业标识 Chemical product and company identification

化学品的名称 Name of chemical product		思格储能电池模块 Sigen Battery
型号规格 Model/Type		SigenStack BAT 12.0（额定电压 38.4 Vd.c、电池能量 12.06 kWh） SigenStack BAT 12.0 (Rated Voltage 38.4 Vd.c, Rated Energy Capacity 12.06 kWh)
制造商 Manufacturer	名称 Name	思格新能源(上海)股份有限公司 Sigenergy Technology, Co., Ltd
	地址 Address	中国(上海)自由贸易试验区云桥路 678 号 12-2 幢 Building12-2，678 Yunqiao Road，China (Shanghai) Pilot Free Trade Zone, Pudong New Area, Shanghai, China
	电话 Telephone number	+86 (021) 61000956
	应急电话 Emergency telephone number	+86 (021) 61000956
工厂 Factory	名称 Name	上海思格源智能科技有限公司 Shanghai Sigeyuan Intelligent Technology Co., Ltd.
	地址 Address	中国（上海）自由贸易试验区临港新片区伟展路 175 号 5 层 514 室 Room 514, Floor 5, No. 175, Weizhan Road, Lingang New Zone, China (Shanghai) Pilot Free Trade Zone, 201304, P.R.China

2. 危险性概述 Hazards identification

火灾或爆炸危险：当锂离子电池损坏或处理不当（机械损伤或过度充电），其内部的易燃液态电解质在温度高于 150℃时会泄露、着火和产生火花；该类物品可能迅速燃烧并伴有闪燃；可能会引燃邻近的其他电池。

Fire or Explosion Hazards: Lithium-ion battery contains flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (>150 degree), when damaged or abused (e.g., mechanical damage or electrical overcharging). May burn rapidly with flare-burning effect. May ignite other batteries in close proximity.

健康危害：电池的电解质会刺激皮肤、眼睛和黏膜组织。燃烧可能产生刺激性、腐蚀性和／或毒性气体。烟雾可能导致头晕或窒息。

Health Hazards: Contact with the electrolyte of battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases, Fumes may cause dizziness or suffocation.

3. 成分/组成信息 Composition/information on ingredients

成分 Ingredient	CAS NO.	含量 Concentration
磷酸铁锂 Phosphoric acid, iron (2+) lithium salt (1:1:1)	15365-14-7	39.6
石墨 Graphite	7782-42-5	20.1
铝合金 Aluminum alloy	——	7
碳酸乙烯酯 Ethylene carbonate	96-49-1	6
碳酸二甲酯 Dimethyl carbonate	616-38-6	6
铜箔 Copper	7440-50-8	5.4
碳酸甲乙酯 Ethyl methyl carbonate	623-53-0	4.9
铝箔 Aluminum	7429-90-5	3.8
隔膜 Polyethylene	9002-88-4	2.3
六氟磷酸锂 Phosphate (1-), hexafluoro, lithium	21324-40-3	2.3
丁苯橡胶 Styrene Butadiene Copolymer	9003-55-8	0.8
导电炭黑 carbon black	1333-86-4	0.8
聚酯氟乙烯 Poly(vinylidene fluoride)	24937-79-9	0.7
羟甲基纤维素钠 Carboxymethylcellulose sodium salt, low viscosity	9004-32-4	0.3

4. 急救措施 First-aid measures

皮肤接触：若接触到电池内的物质，脱去受污染的衣物和鞋袜，立即用流动清水冲洗 20 分钟以上。如刺激持续，就医。

Skin Exposure: If in contact with the internal materials of battery, remove the contaminated clothing, shoes and socks immediately flush with plenty of water for at least 20 minutes. Call a physician.

眼睛接触：若接触到电池内的物质，立即提起眼睑，立即用流动清水冲洗 20 分钟以上。如刺激持续，就医。

Eye Exposure: If in contact with the internal materials of battery, lift your eyelids immediately and rinse them with running water for more than 20 minutes. Call a physician.

吸入：若吸入电池内的物质，立即脱离现场至空气新鲜处。若呼吸困难，给氧;若呼吸停止，人工呼吸。就医。

Inhalation Exposure: If the internal materials of battery are inhaled, immediately remove to fresh air. If breathing is difficult give oxygen, If not breathing, give artificial respiration. Call a physician.

食入：若食入电池内的物质，禁止催吐。立即就医。

Oral Exposure: Do not induce vomiting if the internal materials of battery are swallowed. Call a physician immediately.

最重要的急性和延迟症状/影响：无资料。

Most Important Symptoms/Effects, Acute and Delayed: No data available.

必要时注明立即就医及所需的特殊治疗：无资料。

Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary: No data available.

5. 消防措施 Fire-fighting measures

适当的灭火剂：可用水幕和普通泡沫灭火剂灭火。

Suitable Extinguishing Media: Suitable: Water spray or regular foam.

化学品产生的具体危险：燃烧可能产生刺激性、腐蚀性和或毒性气体。烟雾可能导致头晕或窒息。

Specific Hazards Arising from the Chemical: May decompose upon combust ion to generate irritating, corrosive or toxic fumes. Fumes may cause dizziness or suffocation.

消防人员的特别防护行动：消防员应戴自给正压式呼吸器，穿消防防护服以防止皮肤和眼睛接触。在上风处灭火。不相关人员疏散至安全区域。

Special Protective Action for Fire-fighters: Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes, Fire-extinguishing work is done from the windward. Uninvolved persons should evacuate to a safe place.

6. 泄漏应急处理 Accidental release measures

个人防护措施、防护设备和应急程序：使用个人防护设备。确保足够的通风。确保人群远离泄露区或处于泄漏区上风向。不相关人员禁止进入。移除所有点火源。

Personal Precautions, Protective Equipment and Emergency Procedures: Use personal protective equipment. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Entry to non-involved personnel should be controlled around the leakage area by roping off. Remove all sources of ignition.

环境防护措施：避免泄露物进入地表、沟渠或水域。清洗废水避免直接释放至环境中。

Environmental Precautions: Avoid leakage getting into the earth, ditches or waters, Avoid directly releasing the washing waste-water into the environment.

控制和清洁的方法和材料：如电解液泄漏，用土、沙或其他不可燃材料吸附，漏损的电池和污浊的吸附物应放入金属容器。

Methods and Materials for Containment and Cleaning up: If the electrolyte leaks, use soil, sand or other non-combustible materials to absorb. The leaked batteries and dirty adsorbents should be placed in metal containers.

7. 操作处置与储存 Handling and storage

安全操作的防护措施：操作人员应经过培训，严格遵守操作规程。建议操作人员穿一般作业防护服，戴安全手套。远离火种、热源。避免高温。上作场所严禁吸烟。工作场所应有通风系统和设备。避免随意拆卸电池和养错正负极。须牢固固定在内包装中,以有效防止短路和防止可导致短路的移动。万一电池内的物质泄漏，避免眼睛、皮肤直接接触，避免吸入。应与强氧化剂、易燃物和腐蚀品分开存放。

Precautions for Safe Handling: Operators should be trained and strictly abide by operating procedures. Wear appropriate protective clothing and safety gloves. Keep away from ignition sources, heat and flame. No smoking at working site. Handling is performed in a well-ventilated place. Avoid disassembling the battery at will and reversing battery polarity within the battery assembly, The battery must be firmly packed in inner packaging so as to effectively prevent short circuits and short circuits caused by movement. If the electrolyte leaks, avoid directly contacting with eyes and skin. Avoid inhalation. Incompatibilities: Strong oxidizing agents, combustible materials and corrosives.

安全储存的条件，包括和一切不相容性：储存于阴凉、通风及干燥的库房内。远离火种、热源。避免高温。应与强氧化剂、易燃物腐蚀品分开存放。须牢固在内包装中，以有效防止短路和防止可导致短路的移动。储存区配备相应品种和数量的消防器材、泄漏应急处理设备和合适的收容材料。

Conditions for Safe Storage, Including Any Incompatibilities: Store in a cool, dry, and well-ventilated area, Keep away from ignition sources, heat and flame. Incompat ibilities: Strong oxidizing agents, combustible materials and corrosives. The battery must be firmly packed in inner packaging so as to effectively prevent short circuits and short circuits caused by movement. Storage place should be equipped with appropriate varieties and quantities of firefighting equipment and leakage emergency treatment equipment.

8. 接触控制和个体防护 Exposure controls/Personal

控制参数：GBZ2.1-2019《工作场所有害因素职业接触限值化学有害因素》：

石墨粉尘：PC-TWA 4mg/m^3（总尘）；PC-TWA 2mg/m^3（呼尘）

铜（按 Cu 计）：铜尘 PCTWA 1mg/m^3；铜烟 PCTWA 0.2mg/m^3

铝金属、铝合金粉尘:PC-TWA 3mg/m^3（总尘）

聚乙烯粉尘：PC-TWA 5mg/m^3（总尘）

ACGIH：

石墨：TLV-TWA 2g/m^3

铜：TLV-TWA 1mg(Cu)/m^3，粉尘，烟雾：TLV-TW A0.2mg(Cu)/m^3 烟雾

铝：TLV-TWA 1mg/m^3

Control Parameters: GB2 2. 1-2019 Occupational Exposure limits for Hazardous Agents in the Workplace - Part 1: Chemical Hazardous Agents:

Graphite dust: PC-TWA 4 mg/m^3 (Total dust): PC-TWA 2 mg/m^3 (Respirable dust)

Copper (calculated as Cu): Copper dust PC-TWA 1 mg/m^3; Copper smoke PC-TWA 0. 2 mg/m^3 Aluminum metal, aluminum alloy dust: PC-TWA 3 mg/m^3(Total dust)

Polyethylene dust: PC-TWA5 mg/m^3 (Total dust)

ACGIH:

Graphite: TLV-TWA 2 mg/m^3

Copper: TLV-TWA1mg (Cu)/m^3 Dust, smoke: TLV-TWA0.2mg (Cu)/m^3 Smoke

Aluminum: TLV-TWA 1mg/m^3

适当的工程控制：有通风系统和设备。提供安全淋浴和洗眼设备。

Appropriate Engineering Controls: Mechanical exhaust required, Safety shower and eye bath.

个体防护措施：

Individual Protection Measures :

眼/面部防护：若需要，戴安全防护眼镜。

Eye/Face Protection: Wear chemical safety glasses if needed.

皮肤防护：手防护：戴安全手套。身体防护：穿一般作业防护服。

Skin Protection: Hand Protection: Wear safety gloves. Body Protection: Wear appropriate protective clothing.

呼吸系统防护：若需要，戴管理部门认可的面罩。

Respiratory Protection: Wear government approved respirator if needed.

高温危害：无资料。

Thermal Hazards: No data available.

其他防护：工作现场严禁吸烟、进食和饮水。工作后，淋浴更衣。

Other Protect: No smoking, drinking and eating at working site, Wash thoroughly after handling.

9. 理化特性 Physical and chemical properties

外观: 类白色塑胶及金属外壳

Appearance: Off-white plastics cement and metal shell

气味：无臭

Oder: Odorless

PH 值：8-9

PH Value: 8-9

溶解性：部分溶于水

Solubility: Partial soluble in water

熔点/凝固点：＞300℃

Melting Point/ Freezing Point: >300 degrees Celsius

沸点、初始沸点和沸程：无资料

Boiling Point, Initial Boiling Point and Boiling Range: No data available

闪电（闭杯）：无资料

Flash Point (Closed Cup): No data available

密度/相对密度：无资料

Density/Relative Density: No data available

运动粘度：无资料

Kinematic Viscosity: No data available

燃烧上下极限或爆炸极限：无资料

Lower/Upper Explosion Limit/Flammability Limit: No data available

蒸气压：无资料

Vapour Pressure: No data available

相对蒸气密度：无资料

Relative Vapor Density: No data available

n-辛醇/水分配系数（对数值）：无资料

Partition Coefficient N-0ctanol/Water (Log Value): No data available

自燃温度：无资料

Autoingnition Temperature: No data available

分解温度：无资料

Decomposition Temperature: No data available

颗粒特征：无资料

Particle Characteristics: No data available

易燃性（固体、气体）：无资料

Flammability (Solid. Gas): No data available

10. 稳定性和反应性 Stability and reactivity

反应性：无资料

Reactivity: No data available

化学稳定性：常温常压下稳定

Chemical stability: Stable under normal temperatures and pressures

危险反应的可能性：无资料

Possibility of hazardous reactions: No data available

应避免的条件：误操作，明火，高温，机械滥用，过充电，防止短路和防止可导致短路的移动

Conditions to avoid： Avoid mis operation, exposure to heat and open flame. Avoid mechanical or electrical abuse and overcharge Prevent short circuits and short circuits caused by movement

不相容材料： 强氧化剂、易燃物和腐蚀品

Incompatible materials: Strong oxidizing agents, combustible materials and corrosives

危险的分解产物：碳的氧化物、金属氧化物等

Hazardous decomposition products：Carbon oxides, metal oxides, etc.

11. 毒理学信息 Toxicological information

急性毒性：无资料。

Acute Toxicity:

皮肤腐蚀/刺激：电池内的电解液对皮肤有刺激性。

Skin Corrosion/Irritation: The electrolyte in the battery causes skin irritation.

严重眼损伤/眼刺激：电池内的电解液对眼睛有刺激性。

Serious Eye Damage/Irritation: The electrolyte in the battery causes eye irritation.

呼吸致敏：无资料。

Respiratory Sensitization: No data available.

皮肤致敏：无资料。

Skin Sensitization: No data available.

生殖细胞致突变性：无资料。

Germ Cell Mutagenicity: No data available.

致癌性：无资料。

Carcinogenicity: No data available.

生殖毒性：无资料。

Reproductive Toxicity: No data available.

特定目标器官毒性-单次接触：无资料。

Specific Target Organ Toxicity -Single Exposure: No data available.

特定目标器官毒性-重复接触：无资料。

Specific Target Organ Toxicity -Repeated Exposure: No data available.

吸入危险：无资料。

Aspiration Hazard: No data available.

12. 生态学信息 Ecological information

毒性：无资料。

Toxicity: No data available.

持久性和降解性：无资料。

Persistence and Degradability: No data available.

潜在的生物累积性：无资料。

Bio accumulative Potential: No data available.

在土壤中的流动性：无资料。

Mobility in Soil: No data available.

其他有害效应：无资料。

Other Adverse Effects: No data available.

13. 废弃处置 Disposal considerations

废弃处置方法：废弃电池的处置应符合《中华人民共和国固体废物污染环境防治法》、《废电池污染防治技术政策》等有关法律、法规、政策和标准的要求。建议交给具有资格的化学废物处理部门处置。对于用过的而且将被运送去销毁或回收的电池，在运输前应对其仔细检查，以确保每节电池都是完好无损而且适合运输的。

Disposal Methods: The disposal of discarded battery shall comply with the requirements of relevant laws, regulations, policies and standards such as the "Law of the People's Republic of China on the Prevent ion and Control of Environmental Pollut ion by Sol id Waste" and "Technical Policy for the Prevent ion and Control of Waste Battery Pollution". Contact a licensed professional waste disposal service to dispose of wastes. Used battery being transported for disposal or reclamation should be carefully checked prior to shipment to ensure the integrity of each battery and its suitability for transport.

14. 运输信息 Transport information

锂电池单独运输：通过联合国《试验和标准手册》UN38.3 试验。锂电池总净重>35kg。

Only Lithium Battery during Transport: The product has passed the test items of Manual of Tests and Criteria Section 38.3. The total net weight of the lithium batteries is more than 35 kg.

RID/ADR(2025 版)：危险性类别：9；UN 编号：UN3480；运输名称：锂离子电池组；根据 2.2.9.1.7(g)，锂电池或电池组的制造商和出厂后的销售商应提供联合国《试验和标准手册》第 III 部分第 38.3 小节第 38.3.5 段规定的 UN38.3 试验概要。

RID/ADR (2025 Edition): Hazard Class:9; UN Number: UN3480; Proper Shipping Name: lithium ion batteries According to 2. 2. 9. 1. 7(g), Manufacturers and subsequent distributors of cells or batteries manufactured shall make available the test summary as specified in the Manual of Tests and Criteria, Part Ⅲ, sub-section 38.3, paragraph 38.3. 5.

IATA DGR(66 版)：空运禁运。

IATA DGR (66th Edition): Forbidden for transport.

IMO IMDG CODE 42-24：危险性类别：9；UN 编号：UN3480；运输名称：锂离子电池组；EmS 编号：F-A，S-I；根据 2.9.4.7,锂电池或电池组的制造商和出厂后的销售商应提供联合国《试验和标准手册》第 III 部分第 38.3 小节第 38.3.5 段规定的 UN38.3 试验概要。

IMO IMDG Code 42-24： Hazard Class: 9; UN Number: UN3480; Proper Shipping Name: lithium ion batteries EmS Number: F-A， S-I; According to 2.9.4.7, Manufacturers and subsequent distributors of cells or batteries manufactured shall make available the test summary as specified in the Manual of Tests and Criteria, Part Ill, sub-section 38.3, paragraph 38.3.5.

15. 法规信息 Regulatory Information

国内法规：Domestic Regulations:

锂电池单独运输：Only Lithium Battery during Transport:

The product has passed the test items of Manual of Tests and Criteria Section 38.3.

《危险货物道路运输规则》(JT/T 617-2018)：联合国编号为：3480，中文名称和描述:锂离子电池。

Regulations Concerning Road Transportation of Dangerous Goods(JT/T 617-2018): UN Number: 3480 Name and Description: lithium ion batteries

《危险货物品名表》（12268-2012）：GB 联合国编号为：3480，名称和说明：锂离子电池组，包装类别：Ⅱ。

List of Dangerous Goods (GB 12268-2012): UN Number: UN3480 Shipping Name: Lithium ion batteries Packing Group: Ⅱ.

铁路危险货物目录 (TB/T 30006-2022)：编号：91045，名称和说明：锂离子电池

List of Dangerous Goods by Rail (TB/T 30006-2022): Number: 91045 Name of Product: Lithium ion batteries

国际法规: International Regulations:

欧盟指令 2023/1542 and 2013/56/EU：电池的标记，处置，回收等应满足欧盟指令 2023/1542 及 2013/56/EU 中的规定。

Directive 2023/1542 and 2013/56/EU: The label, disposal and recycling of the battery shall meet the requirements of Ell Directive 2006/66/EC and 2013/56/EU.

ICAO TI：

1.除非依据《技术细则》的相关要求取得豁免，单独包装的锂离子电池(芯)(UN 3480,PI965)和锂金属电池(芯)(UN3090，PI968)货物禁止使用客机运输。

1. Unless be exempted according to ICA0 Tl, the lithium ion cell/batteries (UN 3480, P [965) and lithium metal cell/batteries (UN 3090,P 968)are forbidden for carriage on passenger aircraft.

2.除非依据《技术细则》的相关要求取得特别批准，按照包装说明 965 要求运输的锂离子电池(芯)货物，交运时锂离子电池(芯)的荷电状态不得超过其额定容量的 30%。

2. Unless be approved according to lCA0 Tl, Lithium ion cells/batteries (UN3480, P1 965) must be offered for transport at a state of charge (SoC)not exceeding 30% of their rated design capacity.

16. 其他信息 Other information

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编制公司：思格新能源(上海)股份有限公司

Prepared By: Sigenergy Technology, Co., Ltd

其他信息：本 SDS 报告仅针对电池。报告内容是根据中请单位提供的成分含量等信息和我司现有知识编写，仅作为指导使用。如果电池被用于其它产品中的组件，本 SDS 报告的信息可能不适用。本 SDS 的使用者必须对内容的正确性与完整性做出独立判断，根据实际情况决定其适用性，并对使用后果承担相关法律责任。

Other Information: This SDS is only compiled for battery and based on the information such as ingredients provided by the applicant and our current knowledge. This SDS shall be used only as a guide. If the battery is used as a component in another product, the information in this SDs may not be applicable. The users of this SDS must make independent judgments on the correctness and completeness and then decide its suitability according to the actual situation, The users should take the relevant legal responsibilities for the consequences of use.