

TÜV NORD (Hangzhou) Co.,Ltd.

Room B409, Building 1, No. 9,
Jiuhuan Road, Shangcheng
District, Hangzhou City, Zhejiang
Province, 310018, P.R. China

Phone: +86 (0) 571 8538 6989
Fax: +86 (0) 571 8538 6986

hzpcert@tuv-nord.com
www.tuev-nord.com.cn

MSDS

报告号 / Report no.: TRPVP11051/24E/002

化学品安全技术说明书
Material Safety Data Sheet

申请人 / **Suzhou T-Create Power Co., Ltd**
Applicant :

地址: No.80, Wulingqiao Road, Huangdai Town, Xiangcheng District, Suzhou
Address: city, Jiangsu Province, China

文件号 / File No.: PVP11051/24E-001

编制 / Designed: by:

审核 / Reviewed: by:

List of contents / 目录

第一部分：化学品产品信息和制造商信息 / Section 1 - Chemical Product and Company Identification	3
第二部分：成分组成信息 / Section 2 - Composition/Information on Ingredient.....	4
第三部分：危险识别 / Section 3 - Hazard Identification	5
第四部分：急救措施 / Section 4 - First Aid Measures.....	6
第五部分：消防措施 / Section 5 - Fire Fighting Measures	7
第六部分：泄露应对措施 / Section 6 - Accidental Release Measures	8
第七部分：操作和储存 / Section 7 - Handling and Storage	9
第八部分：接触控制和个人防护措施 / Section 8 - Exposure Controls, Personal Protection	10
第九部分：理化性质 / Section 9 - Physical and Chemical Properties	11
第十部分：稳定性和化学反应 / Section 10 - Stability and reactivity	12
第十一部分：毒理学信息 / Section 11 - Toxicological information.....	13
第十二部分：生态学信息 / Section 12 - Ecological Information.....	15
第十三部分：废弃处置 / Section 13 - Disposal Considerations	16
第十四部分：运输信息 / Section 14 - Transport Information.....	17
第十五部分：管理信息 / Section 15-Regulatory information.....	19
第十六部分：其他信息 / Section 16-Other Information.....	20

第一部分：化学品产品信息和制造商信息 / Section 1 - Chemical Product and Company Identification**产品名称 / Product Name**

可充电锂离子电池模组 (Rechargeable Li-ion Battery Pack)

申请商 / Applicant

Suzhou T-Create Power Co., Ltd

地址/Address: No.80, Wulingqiao Road, Huangdai Town, Xiangcheng District, Suzhou city, Jiangsu Province, China

制造商 / Manufacturer

苏州共科能源科技有限公司

地址：中国江苏省苏州市相城区黄埭镇武凌桥路 80 号

Suzhou T-Create Power Co., Ltd

Address: No.80, Wulingqiao Road, Huangdai Town, Xiangcheng District, Suzhou city, Jiangsu Province, China

工厂 / Factory

苏州共科能源科技有限公司

地址：中国江苏省苏州市相城区黄埭镇武凌桥路 80 号

Suzhou T-Create Power Co., Ltd

Address: No.80, Wulingqiao Road, Huangdai Town, Xiangcheng District, Suzhou city, Jiangsu Province, China

联系人 / Contact

陈秋旭 / Mrs. Qiuxu Chen

邮箱 / E-mail

chenqiuxu@t-createtech.com

联系电话 / Telephone

+86-13914066525

进口商/Importer

MICROGRID ENERGY PTY LTD

Address: 49 ATLANTIC DRIVE KEYSBOROUGH VIC 3173

Telephone: +61 381998129

E-mail: info@microgridenergy.com.au

Emergency telephone: +61 448885551

型号 / Model type	额定容量 / Rated capacity [Ah]	标称电压 / Rated voltage [V]	瓦时数 / Watt-hour [Wh]
TC B05 III	102	51.2	5222

MSDS / 化学品安全技术说明书

文件号 / File No.: PVP11051/24E-001

报告号 / Report No.: TRPVP11051/24E/002

第二部分：成分组成信息 / Section 2 - Composition/Information on Ingredient			
化学名称 / Chemical Name	分子式 / Molecular formula	CAS 号 / CAS No.	浓度/ Concentration [%]
磷酸铁锂/ Lithium iron phosphate	LiFePO ₄	15365-14-7	36-39
石墨/Graphite	C	7782-42-5	16-19
碳酸甲乙酯 /Ethyl methyl carbonate	C ₄ H ₈ O ₃	623-53-0	10-12
铝箔/Aluminum foil	Al	7429-90-5	13-14
铜箔/Copper foil	Cu	7440-50-8	6-7
碳酸亚乙酯/ Ethylene carbonate	C ₃ H ₄ O ₃	96-49-1	8-10
六氟磷酸锂/Lithium hexafluorophosphate(1-)	LiPF ₆	21324-40-3	2-3
聚偏二氟乙烯 polyvinylidene fluoride	(C ₂ H ₂ F ₂) _n	24937-79-9	0.7-1.1
聚乙烯 Polyethylene	(C ₂ H ₄) _n	9002-88-4	2-3
铅 Lead	Pb	7439-92-1	Not Detected
镉 Cadmium	Cd	7330-43-9	Not Detected
汞 Mercury	Hg	7439-97-6	Not Detected

第三部分：危险识别 / Section 3 - Hazard Identification**危险等级 / Fatalness grade**

根据法规（EC）No. 1272/2008，样品属于危险品。

In accordance with Regulation（EC）No 1272/2008, the sample is classified as dangerous goods.

入侵途径 / Invasion route

皮肤接触：皮肤接触电解液可能引起皮肤过敏。

Skin touch: May cause allergy by skin contact with the battery electrolyte.

眼睛接触：与有机溶液接触对眼睛有严重的危害风险。

Eyes touch: Risk of serious damage to the eyes when it contacts with organic solution.

吸入：吸入是有危害的。

Inhalation: Inhalation can be dangerous.

摄入：吞咽时有危害的。

Ingestion: Harmful if swallowed.

健康危害 / Health hazards

/

环境危害 / Environment hazards

电池的组成物质对环境有危害。

The components of the battery are harmful to the environment.

易燃危害 / Flammability hazards

它受到机械、电气或物理滥用/损坏或暴露于高温时，可能会出现易燃危险。

It may present a flammability hazard when it is mechanically, electrically or physically abused/damaged or exposed to high temperature.

第四部分：急救措施 / Section 4 - First Aid Measures**皮肤接触 / Skin touch**

脱去被污染的衣物，并用大量流动的水清洗皮肤至少 15 分钟。如有刺激、受伤或疼痛症状，请立即就医。
Remove any contaminated clothing and flush exposed skin with plenty of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical attention.

眼睛接触 / Eye touch

翻起眼睑，用流动的水清洗至少 30 分钟。立即就医。

Lifting the upper and lower eyelids, flush the eyes with running water for at least 30 minutes. Seek immediate medical attention.

吸入 / Inhalation

将患者立即从暴露现场转移至空气清新处，保持其呼吸道顺畅。如果有可能使用氧气袋。立即就医。

Remove the patient from exposure and move to fresh air immediately. Keep the respiratory tract smooth. Use oxygen if available. Get medical aid.

吞咽 / Ingestion

至少喝 2 杯牛奶。如果患者失去意识请勿催吐，立即就医。

Give at least two glasses of milk. Induce vomiting unless patient is unconscious. Seek immediate medical attention.

第五部分：消防措施 / Section 5 - Fire Fighting Measures**危险特性 / Danger characteristic**

电池不易燃，但如果暴露在火中，内部有机材料会燃烧并释放危险的分解产物。

cell is not flammable, but internal organic materials will burn and releases hazardous decomposition products if exposed to fire.

有害燃烧产物 / Hazardous combustion products

一氧化碳、二氧化碳、金属氧化物等。

Carbon monoxide, carbon dioxide, metal oxide etc.

消防方法 / Firefighting equipment

使用带有全套防护装备的全面罩自给式呼吸器(SCBA)。

Use full-face self-contained breathing apparatus (SCBA) with full protective gear.

灭火剂：泡沫，干粉，二氧化碳，砂土。

Media: foam, powder, CO₂, sandy clay.

特殊消防说明 / Special fire-fighting instructions

如果可能，请从消防区域取出电池。如果加热到 125℃ 以上，电池可能会泄气/爆炸。

If possible, remove battery from firefighting area. If heated above 125℃, battery may vent/explode.

第六部分：泄露应对措施 / Section 6 - Accidental Release Measures

电池内部材料的泄露，如电池电解液，依据如下方法小心处理：

Spilled internal cell materials, such as electrolyte leaked from a battery cell, are carefully dealt with according to the followings:

人体预防 / Precautions for human body

穿戴防护设备（护目镜和防护手套）转移溢出材料。尽可能的避免接触和不要吸入气体。

Remove spilled materials with protective equipment (protective glasses and protective gloves). Do not inhale the gas as much as possible. Moreover, avoid touching with as much as possible.

环境预防 / Environmental precautions

用蛭石或粘土等非反应性吸收剂吸收溢出的材料。防止迁移到土壤、下水道和水道-如果发生这种情况，请通知地方当局。

Absorb spilled material with non - reactive absorbent such as vermiculite or clay. Prevent from migration into soil, sewers and waterways-inform local authorities if this occurs.

清理方法 / Method of cleaning up

将溢出的固体放入合适的容器中，溢出的物质可用非反应性吸收剂吸收。

Place spilled solids into suitable container and spilled material may be absorbed with non-reactive absorbent.

二次危害预防 / Prevention of secondary hazards

避免扩散。收集的材料请勿靠近火源。

Avoid re - scattering. Do not bring the collected materials close to fire.

第七部分：操作和储存 / Section 7 - Handling and Storage**操作 / Handling**

技术措施：

Technical measures:

使用者暴露预防：正常使用下不需要。

Prevention of user exposure: Not necessary under normal use.

火灾和爆炸预防：正常使用下不需要。远离火源和热源。

Prevention of fire and explosion: Not necessary under normal use. Keep away from fire and heating sources.

操作安全预防：不要破坏或拆除外部壳套。

Precaution for safe handling: Do not damage or remove the external casing.

安全操作注意事项：请勿打开或拆卸电池。避免对电池造成任何机械/电气损坏。不要将电池暴露于明火、火源、高温或强氧化剂。不要将电池浸入水中。

Specific safe handling advice: Do not open or disassemble the cell. Avoid any mechanical/electrical damages to the cell. Do not expose the cell to open flames, sources of ignition, high temperature or strong oxidizers. Do not submerge the cell in water.

存储 / Storage

技术措施：

Technical measures:

存储条件：避免机械或电气滥用。存储于阴凉、干燥、通风良好并且温度变化较小的地方。避免高温条件。电池应远离发热设备，不要将电池长时间的暴露在直射的阳光下。

Storage conditions: 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.

禁忌物：导电材料、水、海水、强氧化剂和强酸。

Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids.

包装材料：建议使用绝缘材料或被证明耐用的材料。

Packing material: Insulative and tear proof materials are recommended.

第八部分：接触控制和个人防护措施 / Section 8 - Exposure Controls, Personal Protection**呼吸系统保护 / Respiratory protection**

正常操作期间不需要。在发生电解液泄露和产生刺激性蒸气的情况下，需要使用半面罩呼吸器。

Not required during normal operations. In the events of electrolyte leakage and generation of irritating vapors, half face respirator is required.

眼睛保护 / Eye protection

正常使用条件下不需要。如果处理泄漏或破裂的电池，请使用带侧护板的安全眼镜。

Not necessary under conditions of normal use. Use safety glasses with side shields if handling a leaking or ruptured battery.

身体保护 / Body protection

穿工作服，注意保护裸露的皮肤。

Wear work clothes, pay attention to protect bare skin.

手保护 / Hands protection

穿戴手套。

Wear gloves.

其他保护 / Other protections

工作场所禁止吸烟、饮食。保持良好的卫生习惯。

No smoking, dining and drinking water in the workplace. Keep good habit of hygiene.

第九部分：理化性质 / Section 9 - Physical and Chemical Properties				
物理状态 / Physical state				
外观 / Appearance	气味阈值 / Odor threshold	熔点/凝固点 / Melting point / freezing point	气味 / Odor	pH
固体 / Solid From	不适用 / Not available	不适用 / Not available	无味 / Monotony	不适用 / Not available
初始沸点和沸腾范围 / Initial boiling point and boiling range	闪点 / Flash point	蒸发速率 / Evaporation rate	易燃性 / Flammability	上下易燃极限或爆炸极限 / Upper/lower flammability or explosive limits
不适用 / Not available	不适用 / Not available	不适用 / Not available	不适用 / Not available	不适用 / Not available
蒸汽压力 / Vapor pressure	蒸汽密度 / Vapor density	相对密度 / Relative density	可溶性 / Solubility(ies)	分配系数：n-辛醇/水 / Partition coefficient: n-octanol
不适用 / Not available	不适用 / Not available	不适用 / Not available	不适用 / Not available	不适用 / Not available
自然温度 / Auto-ignition temperature	自动点火温度 / Decomposition temperature	分解温度 / Viscosity		
不适用 / Not available	不适用 / Not available	不适用 / Not available		

第十部分：稳定性和化学反应 / Section 10 - Stability and reactivity**稳定性 / Stability**

在正常温度和压力下稳定。

Stable under normal temperature and pressure.

禁忌物 / Distribution of Ban

强氧化剂、酸、碱。

Strong oxidizer, acid, alkali.

避免条件 / Conditions to avoid

高温、热源和明火。请勿刺穿、压碎或焚烧。

High temperature, heat source and open flame. Do not puncture, crush or incinerate.

燃烧产物 / Decomposition products

在开孔的情况下，有可能发生碳氢化合物分解并释放出一氧化碳、二氧化碳和有毒烟雾。

In case of open cells, there is the possibility of hydrocarbon decomposition and release of CO, CO₂ and toxic smokes.

第十一部分：毒理学信息 / Section 11 - Toxicological information

关于产品本身现无相关数据。电池内部材料信息如下：

There is no available data on the product itself. The information of the internal cell material is as follows:

磷酸铁锂 / Lithium iron phosphate

急性毒性：无相关数据。

Acute toxicity: No applicable data.

局部影响：不可知。

Local effects: Unknown.

致敏作用：不可知。

Sensitization: Unknown.

慢性毒性/长期毒性：不可知。

Chronic toxicity/Long term toxicity: Unknown.

皮肤腐蚀性：虽然比较少见，但可能引起皮疹、红斑等过敏反应。

Skin causticity: Although it is very rare, the rash of the skin and allergic erythema may result.

铝 / Aluminum

局部影响：铝本身无毒。当进入到伤口时，可能导致皮炎。

Local effects: Aluminum itself has no toxicity. When it goes into a wound, dermatitis may be caused.

慢性毒性/长期毒性：长期吸入铝粉颗粒或烟气，可能导致肺部疾病（铝肺）。

Chronic toxicity/Long term toxicity: By the long - term inhalation of coarse particulate or fume, it is possible to cause a lung damage (aluminum lungs).

石墨 / Graphite

急性毒性：不可知。

Acute toxicity: Unknown.

局部影响：进入眼睛，对眼睛有刺激作用，可能导致结膜炎、角膜增厚或浮肿的眼睑炎症。

Local effects: When it goes into one's eyes, it stimulates one's eyes; conjunctivitis, thickening of corneal epithelium or edematous inflammation palpebral may be caused.

慢性毒性/长期毒性：长期吸入高浓度的石墨粉尘颗粒，可能导致肺部疾病或支气管疾病。

Chronic toxicity/Long term toxicity: Since the long - term inhalation of high levels of graphite coarse particulate may become a cause of a lung disease or a tracheal disease.

致癌性：研究表明，石墨不是致癌物质和具有自然毒性的物质。

Carcinogenicity: Graphite is not recognized as a cause of cancer by research organizations and natural toxic substance research organizations of cancer.

铜 / Copper

急性毒性：普通大小的颗粒 60~100mg 可导致肠道絮乱并伴有反胃和炎症。TDLO，兔子皮下注射 375mg/kg。

Acute toxicity: 60-100mg sized coarse particulate causes a gastrointestinal disturbance with nausea and inflammation. TDLO, hypodermic - Rabbit 375mg/ kg.

局部影响：粗颗粒会刺激鼻子和气管。当进入眼睛时，有红眼疼痛症状。

Local effects: Coarse particulate stimulates a nose and a tracheal. When it goes into one's eyes, the symptom of the reddening and the pain is caused.

致敏作用：长期或反复的皮肤接触可能导致皮肤过敏。

Sensitization: Sensitization of the skin may be caused by long - term or repetitive contact.

生殖影响：TDLO，小鼠口服 152mg/kg。

Reproductive effects: TDLO, oral-Rat 152mg/ kg.

有机电解液 / Organic Electrolyte

急性毒性：50LD，小鼠口服 2000mg/kg 或更多。

Acute toxicity: 50 LD, oral-Rat 2000mg/kg or more.

皮肤刺激：兔子-平和

Skin irritation: Rabbit-Mild.

眼睛刺激：兔子-非常严重

Eye irritation: Rabbit-Very severe.

第十二部分：生态学信息 / Section 12 - Ecological Information

对该产品的生态学信息无相关资料。

No information is available about this product's ecological data.

本产品不允许排入下水道和河流。

This product is not allowed to discharge into the sewer and rivers.

流动性：无相关资料。

Mobility: Not available.

持久性和降解性：无相关资料。

Persistence and degradability: Not available.

潜在生物积累性：无相关资料。

Bio accumulative potential: Not available.

生态毒性：对水生物有毒，可能对水生环境产生长期的不利影响。

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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

禁止弃置于下水道或水渠。

Do not put into drains or waterways.

废物 / Waste

依据现有的法规回收或处理废弃物，尽可能选择有资质的废弃物回收者或公司。禁止将废弃物直接排入环境中。

Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company. Do not dispose of waste into the environment.

污染包装 / Soiled packaging:

完全清空容器，并保留容器标识。选择有资质的废弃处理承担人。

Empty container completely. Keep label(s) on container. Give to a certified disposal contractor.

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

电池已通过了 UN38.3 测试。运输过程中请根据 IATA DGR 第 63 版包装说明 PI 965 Section IA/PI 966 Section I/PI 967 Section I/PI 952, IMDG CODE (inc Amdt 40~20) 及 ADR2021 执行。电池应该牢固的放置, 防止短路。运输前要检查包装容器是否完整、密封, 运输过程中要确保容器不泄露、不脱落、不损坏。严禁与氧化剂、酸等混装混运。运输工具必须彻底清洗、消毒, 否则不得装运其他货物。运输途中应防暴晒、雨淋、高温, 应远离火源。海运运输时, 放置点应远离卧室和厨房, 并与机舱、电源和火源处隔离。道路运输时, 应按照规定线路行驶, 在居民区和拥挤区域内不要停车。严禁使用木质、水泥散装运输。

The Batteries have been tested under provisions of the UN Manual of Tests and Criteria, Part III, sub - section 38.3. Transportation should comply with the PACKING INSTRUCTION PI 965 Section IA/PI 966 Section I/PI 967 Section I/PI 952 of IATA DGR 63rd Edition, IMDG CODE (inc Amdt 40-20) and ADR 2021. 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.

UN 编码及运输名称 UN-Number and shipping name

UN3480, Lithium ion batteries (锂离子电池); or
UN3481, Lithium ion batteries packed with equipment (锂离子电池与设备包装在一起); or
UN3481, Lithium ion batteries contained in equipment (锂离子电池安装在设备中); or
UN3171, Battery-powered Equipment (电池驱动的设备); or
UN3171, Battery-powered Vehicle (电池驱动的车辆)

运输危险品分类 Transport hazard class(es)

-ADR, IMDG, IATA Class 9 Miscellaneous dangerous substances and articles . (第 9 类危险品)

包装方式 (如果适用) Packing Instruction(if applicable)

965 IA, 966 I, 967 I

海洋污染物 Marine pollutant(Yes/No)

No

散装运输 Transport in bulk(according to Annex II of MARPOL 73/78 and the IBC Code)

无可用信息 No information available.

特别预防措施 Special precautions

无可用信息 No information available.

用户特别注意事项:

MSDS / 化学品安全技术说明书

文件号 / File No.: PVP11051/24E-001

报告号 / Report No.: TRPVP11051/24E/002

警告：杂项危险物品**Special precautions for user :****Warning : Miscellaneous dangerous substances and articles**

第十五部分：管理信息 / Section 15-Regulatory information

法规信息：

Regulatory Information:

国际航空运输协会：危险物品法规

International Air Transport Association: Dangerous Goods Regulation

国际海事组织：国际海运危险货物规则

International Maritime Organization: International Maritime Dangerous Goods Code

ISO 11014-2009 化学品用安全资料表、内容和排列顺序章节。

ISO 11014-2009 Safety data sheet for chemical products-Content and order of sections.

第十六部分：其他信息 / Section 16-Other Information

上述信息是基于现有的数据信息，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，我方不承担责任，在操作中请根据实际情况做出相应的正确处理。

The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

----- 报告结束 / End of Report -----