

## Material Safety Data Sheet

## 材料安全数据表

Name of sample:

Li-ion Cell

产品名称:

锂离子电芯

Client:

Hunan Zhaoke Power New Energy Co., LTD

委托单位:

湖南兆科动力新能源有限公司

Shenzhen Tiansu Calibration and Testing Co.,Ltd

深圳天溯计量检测股份有限公司

B/1,4, NO.2 Jinlong Road, Longgang District, Shenzhen, China

深圳市龙岗区宝龙街道锦龙大道2号1栋、4栋

Web: www.tiansu.org

E-mail: tsjc@tiansu.org

Tel: 0755-89457984

MSDS



TS(SZ)-J3-006-001-A1

# 1. 化学品及企业标识

## Chemical product and company identification

<b>Commissioned by</b> 委托单位	Hunan Zhaoke Power New Energy Co., LTD 湖南兆科动力新能源有限公司
<b>Commissioner address</b> 委托单位地址	No. 8, Zone C, Gongzhongchuangye Avenue, Huayuan County, Tujia and Miao Autonomous Prefecture, Xiangxi, Hunan 湖南省湘西土家族苗族自治州花垣县工业集中创业大道 C 区 8 号
<b>Manufacturer</b> 制造商	Hunan Zhaoke Power New Energy Co., LTD 湖南兆科动力新能源有限公司
<b>Manufacturer address</b> 制造商地址	No. 8, Zone C, Gongzhongchuangye Avenue, Huayuan County, Tujia and Miao Autonomous Prefecture, Xiangxi, Hunan 湖南省湘西土家族苗族自治州花垣县工业集中创业大道 C 区 8 号
<b>Name of samples</b> 样品名称	Li-ion Cell 锂离子电芯
<b>Type/Model</b> 样品型号	18650-2500mAh
<b>Rated capacity</b> 额定容量	2500mAh
<b>Nominal voltage</b> 标称电压	3.7V
<b>Rated energy</b> 额定能量	9.25Wh
<b>Inspection according to</b> 鉴定依据	EEC Directive 93/112/EC 联合国《关于危险品货物运输的建议书》 UN "Recommendations on the TRANSPORT OF DANGEROUS GOODS"
<b>Emergency telephone call</b> 应急电话	Mr.Xu 13713711457 许先生 13713711457
<div>Seal/检验专用章: </div> <div>Date of issue: January 18, 2021 发行日期: 2021 年 1 月 18 日</div>	

批准\Approved by  
技术负责人\Technology Supervisor

黄中

审核\Reviewed by  
项目工程师\Project Engineer

陈云霞

编制\Compiled by  
测试工程师\Test Engineer

刘澳



## 2.成分\组成信息

## Composition information

Material or ingredient 材料及组分	CAS No.	Wt % 重量/含量
Lithium cobalt oxide	12190-79-3	40-45
Graphite	7782-42-5	20-23
Carbom nanotubes	1333-86-4	4-5
Methyl ethyl carbonate	623-53-0	2-3
Phosphate(1-),hexaf luoro <sup>-</sup> ,lithium	21324-40-3	2-3
Copper	7440-50-8	6-8
Aluminium	7429-90-5	3-5
Nickel	7440-02-0	2-3
Poly(vinylidene flouride)	24937-79-9	2-3

## 3. 危险性概述

## Hazards identification

<b>Explosive risk</b> 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。
<b>Flammable risk</b> 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。
<b>Oxidation risk</b> 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。
<b>Toxic risk</b> 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。
<b>Radioactive risk</b> 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。
<b>Mordant risk</b> 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。
<b>Other risk</b> 其他危险性	This article is Li-ion Cell, Watt hour rate 9.25Wh, which belong to the Lithium Ion Batteries. 该种物品为锂离子电芯, 瓦时率 9.25Wh, 属于锂离子电池。

#### 4. 急救措施

#### First aid measures

**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，同时脱掉污染的衣物和鞋子，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。如果当事人仍然清醒可以采取催吐的方法，并且立即就医。

#### 5. 消防措施

#### Fire-fighting measures

**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。

#### 6. 泄露应急处理

#### Accidental release measures

**Steps to be taken in case Material is Released or Spilled**

为防止电池材料泄露或释放采取的措施

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.

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**

废弃物处置方法

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.

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。



## 7. 操作处置和储存 Handling and storage

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

#### 操作处置和储存中的防范措施

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.

避免机械或电气滥用，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在阳光中。

### Other Precautions

#### 其他要注意的防范措施

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.

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。

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

### Respiratory Protection

#### 呼吸防护:

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.

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

#### 通风条件

Not necessary under conditions of normal use.

正常使用条件下不必考虑。

### Protective Gloves

#### 防护手套

Not necessary under conditions of normal use.

正常使用条件下不必考虑。

### Other Protective Clothing or Equipment

#### 其他防护服装或设备

Not necessary under conditions of normal use.

正常使用条件下不必考虑。

### Personal Protection is recommended for venting battery

#### 电池开阀试验时应做好个人防护

Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

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。

## 9. 物理和化学特性

## Physical and chemical properties

**Appearance:** Prismatic .

外形: 棱柱形

**Odour:** Under normal circumstances, is odorless; if leaking, smells of medical ether.

气味: 正常情况下无气味, 泄露时有醚的气味。

**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。

## 10. 稳定性和反应活性

## Stability and reactivity

**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。



## 11. 毒理学资料

### Toxicological information

**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.

下列情况下会对人体健康产生一定影响：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。

## 12. 生态学资料

### Ecological information

**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。

## 13. 废弃处置

### Disposal consideration

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或电池爆炸。应按照相应的地方性法规处理。

## 14. 运输信息

## Transport information

**Scope of application:** This report applies to by sea, by air and by land.

适用范围: 本报告适用于海运、空运和陆运。

**Label for conveyance:** Lithium Battery Mark, Class 9 hazard label, Cargo Aircraft Only Label.

运输标签: 锂电池标记, 第九类危险品标识, 仅限货机标签。

**UN Number:** UN3480 or UN3481.

UN 编号: UN3480 或 UN3481。

**Marine pollutant:** No.

海洋污染物: 无。

**Proper Shipping name:** Lithium Ion Batteries (or);  
Lithium Ion Batteries Contained in Equipment (or);  
Lithium Ion Batteries Packed with Equipment.

正确的装运名称: 锂离子电池(或)

安装在设备中的锂离子电池(或)

与设备包装在一起的锂离子电池。

**Hazard Classification:** The goods shall be complied with the requirements of Section IA/IB/II of Packing Instructions 965 and Section III of Packing Instructions 966/967 of 62nd DGR Manual of IATA(2021 edition) or IMDG CODE(Amdt. 39-18)2018 Edition, including the passing of the UN38.3 test.

危险性分类: 货物应遵守 IATA 第 62 版 DGR 手册包装说明 PI965 第 IA/IB/II 节和 PI966/967 第 III 节之规定(2021 年版)和海运危险货物规则(Amdt. 39-18)2018 年版, 包括通过 UN38.3 测试手册要求。

## 15. 法规信息

## Regulation information

《危险物品规则》

《Dangerous Goods Regulations》

《对危险货物运输的有关规定的建议》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《国际海运危险货物规则》

《International Maritime Dangerous Goods》

《危险品安全运输技术指令》

《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)

《资源保护及恢复法案》

《Resource Conservation and Recovery Act》(RCRA)

《加州 65 提案》

《California Proposition 65》

《美国联邦法规》

《Code of Federal Regulations》(CFR)

根据所有联邦、州和地方法律。

In accordance with all Federal, State and local laws.



## 16. 其他信息 Other information

This report is valid only for products that meet the following criteria:

本报告仅对符合以下条件的电池产品有效:

**Commissioner:** Hunan Zhaoke Power New Energy Co. , LTD.

委托方: 湖南兆科动力新能源有限公司

**Manufacturer:** Hunan Zhaoke Power New Energy Co. , LTD.

制造商: 湖南兆科动力新能源有限公司

**Sample type&Mode:** Li-ion Cell 18650-2500mAh.

产品名称&样品型号: 锂离子电芯 18650-2500mAh.

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. Shenzhen Tiansu Calibration and Testing 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,深圳天溯计量检测股份有限公司不承担任何责任。

## STATEMENTS

## 声 明

1. The test report is invalid without the official stamp of Tiansu.  
本报告无检测单位印章无效。
2. Nobody is allowed to photocopy or partly photocopy this test report without written permission of Tiansu.  
未经本试验室书面同意，不得部分地复制本报告。
3. The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.  
本报告无批准人、审核人及鉴定人签名无效。
4. The test report is invalid if altered.  
本报告涂改无效。
5. Objections to the test report must be submitted to Tiansu within 15 days.  
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。
6. The test report is valid for the tested samples only.  
本报告仅与送检样品有关。

-----报告结束-----