



材料安全数据表

Material Safety Data Sheet

样品名称: 锂离子电池组, U18650-10S2P-4. 3Ah, 36V, 4. 3Ah

Name of Sample: Lithium Ion Battery Pack

委托单位: 飞碟能源电池科技有限公司

Commissioner: UFO Source Energy Battery Technology Co., Limited

上海储融检测技术有限公司

Shanghai Truron Testing Technology Co., Ltd



材料安全数据表

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Section 1. 产品名称及企业标识

CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

样品名称 Name of goods	锂离子电池组 Lithium Ion Battery Pack	
样品型号 Type/Mode	U18650-10S2P-4.3Ah	
额定电压 Nominal Voltage:	36V	
额定容量 Nominal Capacity:	4.3Ah,154.8Wh	
生产单位 Manufacturer	深圳市三和朝阳科技有限公司 SHENZHEN SUNHE ENERGY CO.,LTD	
鉴定依据 Inspection according to	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"	
应急电话 Emergency telephone call	+86-755-84535976	
-	接样日期: 2016-04-18	签发日期: 2016-05-27

Approved by: Joe Chen
批准: _____

Reviewed by: Joe Chen
审核: _____

Tested by: Amy Dong
主检: _____



Section 2. 成分/组成信息

COMPOSITION INFORMATION

化学成分 Chemical Composition	化学式 Chemical Formula	CAS 号 CAS No.	重量百分比(约) Weight (%) (About)
钴酸锂 Lithium Cobalt Oxide	LiCoO ₂	12190-79-3	30
石墨 Graphite	C	7782-42-5	20
电解液 Electrolyte	LiPF ₆	21324-40-3	13
铜箔 Copper foil	Cu	7440-50-8	10
铝箔 Aluminum foil	AL	7429-90-5	8
PVDF (粘结剂) Polyvinylidene fluoride	(CH ₂ -CF ₂) _n	24937-79-9	4
其他 Others	/	/	15
铅 lead	Pb	7439-92-1	无 Not Detected
镉 cadmium	Cd	7440-43-9	无 Not Detected
汞 mercury	Hg	7439-97-6	无 Not Detected

Section 3. 危险性概述

Hazards Identification

爆炸危险性 Explosive risk	该物品不属于爆炸危险品 This article does not belong to the explosion dangerous goods
易燃危险性 Flammable risk	该物品不属于易燃危险品 This article does not belong to the flammable material
氧化危险性 Oxidation risk	该物品不属于氧化危险品 This article does not belong to the oxidation of dangerous goods
毒害危险性 Toxic risk	该物品不属于毒害危险品 This article does not belong to the toxic dangerous goods
放射危险性 Radioactive risk	该物品不属于放射危险品 This article does not belong to the radiation of dangerous goods
腐蚀危险性 Mordant risk	该物品不属于腐蚀危险品 This article does not belong to the corrosion of dangerous goods
其他危险性 other risk	该物品为锂离子电池, 瓦时率 154.8Wh, 属于 IMDG CODE 和 IATA DGR 中的第九类危险品 This article is Li-ion battery, Watt hour rate 154.8Wh, which belong to the miscellaneous dangerous goods, as is described in IMDG CODE and IATA DGR.



Section 4. 急救措施

First aid measures

食入：饮用两杯牛奶或水。如果当事人仍然清晰可以采取催吐的方法，并且立即就医。

Ingestion: Give at least two glasses of milk or water. Induce vomiting unless patient is unconscious and call a physician immediately.

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。

Inhalation: Remove from exposure and move to fresh air immediately. Use oxygen if available.

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。

Eye: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

皮肤：万一接触，用大量水冲洗至少 15 分钟，同时除去污染的衣物和鞋子，迅速就医。

Skin: Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes, Get medical aid.

Section 5. 消防措施

Fire-fighting measures

燃点：不适用

Flash Point: N/A.

自燃温度：不适用

Auto-Ignition Temperature: N/A.

灭火介质：大量水（降温），二氧化碳

Extinguishing Media: Water, CO₂

特殊灭火程序：自给式呼吸器

Special Fire-Fighting Procedures: Self-contained breathing apparatus.

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。

Unusual Fire and Explosion Hazards: Cell may vent when subjected to excessive heat-exposing battery contents.

燃烧产生的危险物品：一氧化碳，二氧化碳，锂氧化物烟气

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

Section 6. 泄露应急处理

Accidental release measures

为防止电池材料泄露或释放采取的措施

Steps to be taken in case Material is Released or Spilled

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。

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 contain for disposal.

废弃物处置方法

Waste Disposal Method

电池的循环寿命是有限的，充满电后的电池使用时间比较短时，需要更换新的电池。

Despite being rechargeable, the battery has a limited life span, Replace when usage time between charges becomes short.

请提供所有电池用于回收符合当地的指导和监管。禁止扔入垃圾箱。

Please offer all used batteries for recycling according with local guidelines and regulation. Do not throw in the trash.

Section 7. 操作处置和储存

Handling and storage

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。

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 any liquids.

操作处置和储存中的防范措施

Precautions to be taken during handling and storage

禁止物理或电滥用，禁止高温储存，最好将电池储存在阴凉、干燥、通风等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与阳光中。

Avoid mechanical or electrical abuse. Preferably storage 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.

其他防范措施

Other Precautions

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。

The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short circuit or install with incorrect polarity.

Section 8. 接触控制/个人防护

Exposure controls/personal protection

呼吸防护：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。

Respiratory Protection: 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.

通风条件:正常使用条件下不需要。

Ventilation: Not necessary under conditions of normal use.

防护手套:正常使用条件下不需要。

Protective Gloves: Not necessary under conditions of normal use.

其他防护服装或设备:正常使用条件下不需要。

Other Protective Clothing or Equipment: Not necessary under conditions of normal use.

电池开阀试验时应做好个人防护:呼吸防护，防护手套，防护服装和有护边的安全玻璃罩都要准备的。

Personal Protection is recommended for venting battery: Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

Section 9. 理学特性

Physical and chemical properties

外形：方形

Appearance: Li-ion prismatic

气味：泄漏时，有醚气味

Odour: If leaking, smells of medical ether.

酸碱度：不适用

pH: Not applicable as supplied.



燃点：除单个电芯暴露试验外其他不适用。

Flash Point: Not applicable unless individual components exposed.

可燃性：除单个电芯暴露试验外其他不适用。

Flammability: Not applicable unless individual components exposed.

相对密度：除单个电芯暴露试验外其他不适用。

Relative density: Not applicable unless individual components exposed

溶解性（水溶性）：除单个电芯暴露试验外其他不适用。

Solubility (water): Not applicable unless individual components exposed

溶解性（其他）：除单个电芯暴露试验外其他不适用。

Solubility (other): Not applicable unless individual components exposed

Section 10. 稳定性和反应活性

Stability and reactivity

稳定性：产品在第 7 节所述的条件下稳定。

Stability: Product is stable under conditions described in Section 7.

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、短路或长时间暴露在潮湿的条件下。

Conditions to Avoid: Heat above 70°C or incinerate、deform、mutilate、crush、disassemble、overcharge、short circuit or expose over a long period to humid conditions.

应避免的材料：氧化剂，碱，水。

Materials to avoid: Oxidizing agents, alkalis, water.

危险分解物：有毒烟雾，并可能形成过氧化物。

Hazardous Decomposition Products: Toxic Fumes, and may form peroxides.

聚合危害：不适用

Hazardous Polymerization: N/A.

如果发生泄露，避免与强氧化剂、无机酸、强碱或卤代烃接触。

If leaked, forbidden to contact with strong oxidizers、mineral acids、strong alkalies or halogenated hydrocarbons.

Section 11. 毒理学资料

Toxicological information

标志及症状：无，除非电池破裂。

Signs & symptoms: None, unless battery ruptures.

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。

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

吸入：对肺有刺激性。

Inhalation: Lung irritant.

皮肤接触：对皮肤刺激性。

Skin contact: Skin irritant.

眼睛接触：对眼睛有刺激性。

Eye contact: Eye irritant

食入：吞下中毒。

Ingestion: Poisoning if swallowed..

下列情况下健康状况会恶化：万一发生与电池内部材料接触的事故，轻微或严重的刺激，都可能使皮肤出现干燥和灼烧的感觉，并且损坏靶器官（肝脏，肾脏）的神经。

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to severe irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

Section 12. 生态学资料

Ecological information

正常使用时，电芯/电池不会有生态和环境方面的影响。

There is no influence to ecology and environment when used properly.

Section 13. 废弃处置

Disposal consideration

废弃电芯不能直接当作普通垃圾处理，用塑料袋装好密封放入回收电池的垃圾桶或当作特殊垃圾处理。废弃电芯不能丢进火中和置于高温环境，不要拆卸，同时不能刺穿和挤压等等。电芯的包装纸盒和塑料盒可作为普通垃圾处理。

Depleted batteries shouldn't be treated as ordinary trash. Worn out batteries must be discharged, placed in plastic bags and then put into recycle bin. Shouldn't be thrown into fire or placed in high temperature. Shouldn't be dissected, pierced, crushed or treated similarly. The package and plastic box which contain batteries could be treated as ordinary trash. Best way is recycling.

Section 14. 运输信息

Transport information

电芯和电池遵从美国的有害物质管理规定，依据特殊规定188的IMDG规则。所有电芯和电池经测试都能通过美国测试标准手册的第三部分38.3章测试规范。

Lithium cells and batteries are subject to the requirements of the U.S. hazardous materials



regulations pursuant to 49 CFR 173.185(b), and IMDG Code pursuant to Special Provision 188. Each cell or battery has been tested under provisions of the UN Manual of Tests and Criteria, Part III, Sub section 38.3.

危害分类：电芯/电池符合UN38.3（《联合国建议书》第三部分第38.3条）、第57版DGR包装规范的要求，并且确定在运输时符合相关的规定而不受限制。

Hazard Classification: Lithium cells and batteries are subject to the requirements of UN38.3 (UN Manual of Tests and Criteria, Part III, subsection 38.3), IATA DGR 57th Edition 2016 Regular Bound Manual, and transported in accordance with applicable regulations and not restricted.

运输电池时，电池必须经过打包，且有措施（例如将裸露的极耳绝缘）防止由于产热而演变的危险并短路防护。

Batteries must be packaged and offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals) and protects against short circuits.

Section 15. 法规信息

Regulation information

法律信息

Law 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)
- 《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 TitleIII (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)
根据所有联邦、州和地方法律。
In accordance with all Federal, State and local laws.

Section 16. 其他信息

Other information

本 MSDS 中的信息不对深圳市三和朝阳科技有限公司生产的所有电池有效。本文信息来源可靠，但我们不保证来源描述的完整性、精确性等。使用者须掌握正确使用电池的方法并对电池的使用负责，上海储融检测技术有限公司对由于电池的滥用而造成的伤害和损失不承担责任。

This information is not effective to all the batteries manufactured by SHENZHEN SUNHE ENERGY CO.,LTD .This information comes from reliable sources, but no warranty is made to the completeness and accuracy of information contained. Shanghai Truron Testing Technology Co., Ltd doesn't assume responsibility for any damage or loss because of misuse of batteries. Users should grasp the correct use method and be responsible for the use of batteries.

Amy Dong