

Material Safety Data Sheet for Lithium-ion Cells

锂离子电芯产品安全技术说明书

Section 1 Chemical Product and Company Identification

第一部分：产品名称及企业标识

Trade name: Lithium-ion cells

产品名称：锂离子电芯

Model: All 18650 models manufactured by Zhengzhou BAK with capacity less than or equal to 4.0 Ah.

型号：郑州比克生产的容量小于等于 4.0Ah 的 18650 型电芯

Nominal voltage: 3.6V or 3.7V

额定电压：3.6V 或 3.7V

Manufacturer: Zhengzhou BAK Battery Co., LTD

生产厂家：郑州市比克电池有限公司

Address: 300 Meters of North Road, West Conjunction of Zhongxing Road and BAK Road, Zhongmou County, Zhengzhou City

地址：郑州市中牟县中兴路与比克大道交叉口向西 300 米路北

Telephone: +86-755-61886818

电话：+86-755-61886818

Section 2 Composition/Information on Ingredients⁽¹⁾

第二部分：成分/组成信息⁽¹⁾

Chemical name 化学名称	Molecular formula 分子式	CAS No. 化学文摘登记号	Classification (approximate) 分类 (近似)
Lithium transition metal oxide ⁽²⁾ 锂过渡金属氧化物 ⁽²⁾	Li_xMO_2	182442-95-1	37.3%
Carbon (graphite) 碳 (石墨)	C	7782-42-5	21.0%
Aluminum 铝	Al	7429-90-5	3.27%
Copper 铜	Cu	7440-50-8	7.69%
Steel can 钢壳	Fe	7439-89-6	13.53%
Electrolyte 电解液	$\text{C}_3\text{H}_4\text{O}_3$ $\text{C}_4\text{H}_8\text{O}_3$ $\text{C}_3\text{H}_6\text{O}_3$ F_6LiP	96-49-1 623-53-0 616-38-6 21324-40-3	10.67%
Others 其他		proprietary 专有的	6.54%

Notes:

注：

- 1) Each of the products may not contain all of these materials.
- 2) M means a combination of Co, Ni, Mn, or Al. This component may consist of a mixture

of compounds, each of which may contain these elements.

- 1) 并非每款产品都包含表中所提到的所有物质。
- 2) M 代表 Co、Ni 与 Mn 或 Al 的组合。这种材料可能由化合物的混合物组成，每种化合物可能均含有这些元素。

Section 3 Hazards Identification

第三部分：危险性概述

Lithium-ion cells are not hazardous when used under the manufacturer's instruction. If abused, there is a risk of rupture, fire, heat, or leakage of internal components, which could release detrimental substances.

正常情况下，按照生产商提供的说明来使用锂离子电芯，不会有危险。一旦滥用，电芯可能会发生破裂、着火、发热及内部物质泄漏等情况，造成有害物质泄漏。

Section 4 First-aid Measures

第四部分：急救措施

Lithium-ion cells are not hazardous under normal circumstances. Fire or rupture, once happen to the cells, the internal hazardous substance may leak and further form some other hazardous substance. The following measures should be taken in case of contact with these matters:

在正常情况下，锂离子电芯不会产生危害。一旦电芯破裂或着火，可能会发生内部有害物质泄漏和有害物质生成等情况，如有接触，应采取以下措施：

Eyes: Check and remove any contact lenses. Immediately flush the eye with plenty of clean water for at least 15 minutes seeking medical assistance.

眼睛接触：检查并取下隐形眼镜，立即用大量流动的清水冲洗至少15分钟，并及时就医。

Skin: Immediately flush with plenty of clean water for 15 minutes; seek medical assistance if the reaction is severe.

皮肤接触：立即用大量流动的清水冲洗 15 分钟，如果情况严重，请及时就医。

Inhalation: Remove to fresh air immediately, seek medical assistance, and ventilate the contaminated area.

吸入：立即转移到有新鲜空气的地方，及时就医，并及时对受污染区域通风。

Ingestion: Rinse your mouth with clean water immediately. Make the victim vomit and seek medical assistance.

食入：立即用清水漱口，催吐，并及时就医。

Section 5 Fire-fighting Measures

第五部分：消防措施

Extinguish with plenty of water, dry powder extinguishers, sands, or earth. Combustion and decomposition products include carbon monoxide, carbon dioxide, hydrogen fluoride, phosphorus fluoride.

可用大量的水、干粉灭火器、沙子或土灭火。燃烧产物和分解产物包括：CO、CO₂、HF、氟化磷。

Section 6 Accidental Release Measures

第六部分：泄漏应急处理

When leakage of cells happens, the liquid could be absorbed with sands, earth, or other inert substance, and the contaminated area should be ventilated.

电芯内部物质泄漏后，可用沙子、土或其他惰性物质吸收泄漏液体，并及时通风。

Section 7 Handling and Storage

第七部分：操作处置和储存

Handling Precautions:

操作注意事项：

Do not short positive and negative terminals by contact with conductors. Do not overheat or incinerate. Do not open, puncture, crush or deform cells

请勿将电芯的正极端和负极端与导体连接导致短路。请勿使电芯过热或将电芯焚烧。请勿将电芯拆开、刺伤、挤压或使其形变。

Storage: Store and use away from heat, sparks, open flame, or any other ignition source.

Store in a cool and dry environment (less than 35 °C, less than 85% RH).

储存：电芯在储存和使用时应远离高温、火花、明火或其他火源。应将电芯储存在阴凉、干燥的环境中（温度低于35°C，湿度低于85%RH）。

Section 8 Exposure Controls/Personal Protection

第八部分：接触控制/个体防护

There is no protection required under normal conditions. In case of leakage, ventilation is required. Respirators, eye protection, protective gloves, and protective clothes are required when dealing with fire and leakage.

在正常情况下，不需要防护。以防泄漏，电芯放置场所需通风。当处理电芯着火和泄漏问题时，需要佩戴防毒面具、护目镜、防护手套和防护服。

Section 9 Physical and Chemical Properties

第九部分：理化特性

Form: Solid;

类型：固体；

Color: Various;

颜色：多种；

Odor: Odorless;

气味：无味；

pH: Not available;

PH：不适用；

Flash point: Not available;

闪点：不适用；

Flammability: Not available;

可燃性：不适用；

Vapor pressure: Not available;

蒸汽压：不适用；

Solubility (water): Insoluble;

溶解性（水）：不溶性；

Section 10 Stability and Reactivity

第十部分：稳定性和反应性

Cells are stable under normal conditions. The following substance may appear in case of fire or leakage: organic carbonate, hydrogen fluoride, carbon monoxide, carbon dioxide, phosphorus fluoride.

在正常情况下，电芯是稳定的。如果电芯着火或内部物质泄漏，可能产生的物质有：有机碳酸盐、氟化氢、一氧化碳、二氧化碳和氟化磷等。

Section 11 Toxicological Information

第十一部分：毒理学资料

Cells are not hazardous when it is used properly. In case of fire or leakage, combustion and decomposition products may cause irritation and toxicity to the skin, eye, and respiratory systems. Toxicity data of some substances are listed following:

正常使用时，电芯不会产生有害物质。如果电芯着火或内部物质泄漏，燃烧及分解产物可能会对皮肤、眼睛和呼吸系统有一定的刺激性和毒副作用。此处列举了部分物质的毒理学数据：

Hydrogen fluoride 氟化氢：

Extremely toxic, it may be fatal if inhaled or ingested. Readily absorbed through skin contact may be fatal. Possible mutagen. LCLO: 50 ppm/30m (human beings), LC50: 1276 ppm/1h (rats).

剧毒。吸入或食入可致命。可通过皮肤吸收而致命。可诱导突变。LCLO: 50 ppm/30m (人), LC50: 1276 ppm/1h (大鼠)。

Carbon and graphite 碳和石墨：

Slightly hazards in skin contact (irritant), ingestion, inhalation, which could cause chronic damage to the upper respiratory tract and cardiovascular system.

皮肤接触（刺激）、食入和吸入有轻微危害，对上呼吸道和心血管系统有慢性损害。

Copper 铜：

Dust may cause respiratory irritation.

粉尘对呼吸系统有刺激性。

LD50: 3.5 mg kg⁻¹(mouse).

LD50: 3.5 mg kg⁻¹(小白鼠)

Section 12 Ecological Information

第十二部分：生态学资料

There is no influence on ecology or the environment when the cells are used and disposed of properly.

在正常使用和处理时，电芯对生态环境没有影响。

Do not let cells' internal components enter the marine system. Avoid releasing to waterways, wastewater or groundwater.

请勿使电芯的内部物质进入海洋环境。避免将其排放到水渠、废水和地下水中。

Section 13 Disposal

第十三部分：废弃处置

Do not treat discarded cells as ordinary trash. Recycling is recommended and required by law in many jurisdictions. Do not incinerate the cells. Leaking or damaged cells should be treated

as chemical waste. Packaging is normally not contaminated by cells.

请勿将废弃电芯当作普通垃圾处理。许多地区的法律建议并要求对其废旧电芯回收利用。请勿焚烧。请将泄漏的或损坏的电芯作为化学废品处理。外包装通常不会被电芯污染。

Section 14 Transport Information

第十四部分：运输信息

The following regulations are applied to the transport of Lithium-ion cells worldwide:

本厂生产的锂离子电芯的国际运输满足以下法规：

- 1) According to UN Recommendations on the Transport of Dangerous Goods, Lithium-ion cells are assigned to UN ID#3480, Class 9, Packing group IB
根据《联合国关于危险货物运输的建议书》，锂离子电芯被归为包装 IB 组第九类 UN 编号 3480。
- 2) International Air Transport Association (IATA) Dangerous Goods Regulations (DGR)
国际航空运输协会 (IATA)《危险品规则》(DGR)
- 3) International Maritime Organization (IMO) International Maritime Dangerous Goods (IMDG) Code
国际海事组织 (IMO)《国际海运危险货物规则》(IMDG)
- 4) IATA DGR 63rd Edition and IATA Lithium Battery Shipping Guidelines 3rd edition for transportation
IATA DGR 第 63 版和 IATA 锂电池运输指南第 3 版
- 5) Transport fashion: by air, by sea
运输方式：空运、海运

Hazard Classification: The goods comply with the requirements of Section IB of Packing Instructions 965 of 63rd DGR Manual of IATA (2022 edition), Special provision 188 of IMDG CODE (Amdt. 40-20), passing the UN38.3 test.

危害等级：货物满足 IATA (2022 版) 第 63 版 DGR 手册中包装说明 965 IB 节要求以及国际海运危险货物规则 (IMDG CODE) (Amdt. 40-20) 特殊规定 188 的要求，并通过 UN38.3 测试。

Section 15 Regulatory Information

第十五部分：法规信息

For shipping regulations see section 14.

相关运输规定，参见第十四部分。

Section 16 Other Information

第十六部分：其他信息

This document is provided for technical information only. The information is provided in good faith and is believed to be accurate as of the date of preparation. BAK makes no warranty, either express or implied, with respect to this information and disclaims all legal responsibility from reliance on it.

本文件仅供技术参考。本文件为友情提供，且自编制日期起有效。比克电池有限公司对本文件不作任何担保，并拒绝承担与此相关的任何法律责任。

Prepared/Date: Song Wei 2022-1-1 Audited/Date:  Approved/Date: 

File No./Rev.: MSDS-163/A

Serial Number	Change item	Change Content	PIC	Date
1	NO 无	first edition 初版	Song Wei	2022-1-1