Material Safety Data Sheet
材料安全数据表

Report No.: 报告编号：	CMC250624058M01
Name of sample: 样品名称：	LiFePO4 Battery 磷酸铁锂电池
Model: 型号：	CMLB-12.8V-200
Type: 规格：	12.8V 200Ah 2560Wh
Client: 委托单位：	Crown Micro FZCO
Address: 地址：	Plot No. S60806, Jafza South, Jebel Ali Free Zone, Dubai, United Arab Emirates

Tested by 主检人：
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Seal of CMC:
CMC 印章：
CMC Testing International (Shenzhen) Co., Ltd.

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CMC Testing International (Shenzhen) Co., Ltd.
众检检验认证（深圳）有限公司

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Section 1- Identification of the Substance/Preparation and of the Company/Undertaking 第一部分 物质及企业标识			
Name of Sample 样品名称	LiFePO4 Battery 磷酸铁锂电池	Weight 重量	21.2kg
		Size 尺寸 (L×W×T)	(520.3×240.4×220.1)mm
Model 型号	CMLB-12.8V-200		
Manufacturer 制造商	Crown Micro China Limited 克朗麦克科技（深圳）有限公司		
Manufacturer Address 制造商地址	No.212, 2nd floor, Block 8, Jinshanyuan logistic park, Hongmian Road, Henggang community, Longgang District, Shenzhen City, China 深圳市龙岗区横杠街道六约社区红棉路 6789 号 8 栋 212		
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Fax 传真	--		
24h Emergency Phone No. 24h 紧急联络电话	00971-545602341		

Section 2- Hazards Identification 第二部分 危险性概述	
Classification of Danger 危险性类别	See section 14. 见第十四部分。
Primary Route(s) of Exposure 浸入途径	Eye, skin contact, ingestion. 眼睛，皮肤接触，摄入。
Health Hazard 健康危害	The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's Hazard of rupture, fire, heat, leakage of internal components, which could cause casualty loss. Abuses including but not limited to the following cases: charged for long time, short circuited, put into fire, whacked with hard object, punctured with acute object, crushed, and broken. 正常条件下根据制造商的说明使用电池不会产生危害。使用不当的情况下，有破裂、起火、发烫、内部成分泄漏的危险，并可能造成意外损失。使用不当的行为包括但不限于下列情况：长时间充电、短路、投入火中、硬物撞击、尖物刺破、破碎，和破裂。

Section 3- Composition/Information on Ingredients
第三部分 成分/组成信息

Chemical Name 化学名称	Concentration or concentration ranges (%) 浓度或浓度范围(%)	CAS Number CAS 号(化学文摘索引登记号)
Lithium iron phosphate ($LiFePO_4$) 磷酸铁锂	36.8	15365-14-7
Graphite 石墨	17.5	7782-42-5
Ethyl methyl carbonate 碳酸甲乙酯	14.6	623-53-0
Copper Foils 铜箔	8.2	7440-50-8
Aluminum foil 铝箔	13.6	7429-90-5
Ethvlene carbonate 碳酸亚乙酯	7.3	96-49-1
Lithium hexafluorophosphate 六氟磷酸锂	2.0	21324-40-3

Labeling according to EC directives.
标签根据 EC 指令。
No symbol and Hazard phrase are required.
不需要象形符号和危险短语。
Note: CAS number is Chemical Abstract Service Registry Number.
注意: CAS 号是化学文摘服务注册号码。
N/A=Not apply.
N / A =不适用。

Section 4- First Aid Measures
第四部分-急救措施

Eye 眼睛	Flush eyes with plenty of water for least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid. 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 皮肤	Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid. 万一接触，用大量的水冲洗至少 15 分钟，同时除去污染的衣物和鞋子，迅速就医。
Inhalation 吸入	Remove from exposure and move to fresh air immediately. Use oxygen if available. 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 食入	Induce vomiting unless patient is unconscious. Call a physician. 如果当事人仍然清醒可以采取催吐的方法，并且立即就医。

Section 5- Fire Fighting Measures 第五部分-消防措施	
Characteristics of Hazard 危险特性	The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. 该产品会导致眼睛，皮肤和粘膜灼伤。热分解可能导致释放刺激性气体和蒸汽。
Hazardous Combustion Products 燃烧产生的危险物品	Carbon dioxide. 二氧化碳。
Fire-extinguishing Methods and Extinguishing Media 灭火方法及灭火剂	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. 使用适合当地情况和周围环境的灭火措施。
Attention in Fire-extinguishing 灭火注意事项	Wear self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. 因为压强关系，要穿戴可呼吸式全身防护装备，MSHA/NIOSH（经认证或等效的），以及佩戴全套防护装置。

Section 6- Accidental Release Measures 第六部分-泄露应急处理	
Personal Precautions, protective equipment, and emergency procedures 个人预防措施、防护装备和应急程序	In case of rupture. Attention! Corrosive material. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Refer to protective measures listed in Sections 7 and 8. 万一破裂。注意！腐蚀性物质。避免接触皮肤，眼睛或衣服。确保空气流通。根据需要使用个人防护装备。将人员撤离到安全区域。让人们远离溢出/泄漏处和处于逆风。参考第七部分和第八部分中列出的防护措施。
Environmental Precautions 环境保护措施	Prevent product from contaminating soil and from entering sewers or waterways. 防止产品污染土壤和进入下水道或水道。
Methods and materials for Containment 方法和材料控制	Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately. 出于安全，阻止泄漏，可以用干砂或泥土来遏制液体溢出，立即清理溢出物。
Methods and materials for cleaning up 清理的方法和材料	Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal. 用惰性吸收剂(干砂或泥土)吸收溢出的材料。污染物转移到可接受的废物容器中。收集所有受污染的吸收剂，按照第十三部分的说明进行处理。用洗涤剂和水清洁污染区域，收集所有受污染的洗涤水，妥善处理。

Section 7- Handling and Storage 第七部分-操作处置和储存	
Handling 操作处置	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。禁止短路或将电池正负极错误的安装在设备中。

Storage 储存	Store in a cool, dry, well-ventilated area away from incompatible substances. Store locked up. Keep out of the reach of children. 储藏于阴凉，干燥，通风处，远离接触会发生反应的材料。存储锁定。放在儿童无法接触的地方。
Other Precautions 其他要注意的防范措施	In case of rupture. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection equipment. 万一破裂。按照良好的工业卫生和安全规范进行操作。 避免接触皮肤，眼睛或衣服。使用个人防护设备。

Section 8- Exposure Controls/Personal Protection 第八部分-接触控制和个体防护	
Engineering Controls 工程控制	Use adequate ventilation to keep airborne concentrations low. If used under conditions that generate particulates, the ACGIH TLV-TWA of 3mg/m^3 respirable fraction (10mg/m^3 total) should be observed. 保证空气流通使空气密度保持在低水平。如果在会生成微粒的情况下使用，应仔细观察 3mg/m^3 ACGIH TLV-TWA 3 的吸入量（总量为 10mg/m^3）。
Personal Protective Equipment 个人防护设备	Eye and Face Protection: None required for consumer use. If there is a Hazard of contact: Tight sealing safety goggles. Face protection shield. 眼睛和脸部保护：消费者无需使用。如果有接触危险：密封安全护目镜。面部防护罩。 Skin and Body Protection: None required for consumer use. If there is a Hazard of contact: Wear protective gloves and protective clothing. 皮肤和身体防护：消费者无需使用。如果有接触危险：穿戴防护手套和防护服。 Respiratory Protection: No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. 呼吸系统防护：正常使用条件下不需要防护设备。如果超过暴露限值或发生刺激，可能需要通风和疏散。

Section 9- Physical and Chemical Properties 第九部分 理化特性	
Physical State 物理状态	
Appearance: 外形：	Cuboid 长方体
Color 颜色	Blue 蓝色
Odour 气味	If leaking, smells of medical ether. 泄漏时，医用乙醚的气味。
Change in condition: 变化的条件:	
pH 酸碱度	Not applicable as supplied. 不适用。
Flash Point 闪点	Not applicable unless individual components exposed. 除非单个的组件暴露，否则不适用。

Flammability 易燃度	Not applicable unless individual components exposed. 除非单个的组件暴露，否则不适用。
Relative density: 相对密度	Not applicable unless individual components exposed. 除非单个的组件暴露，否则不适用。
Solubility (water) 溶解性（水溶性）	Not applicable unless individual components exposed. 除非单个的组件暴露，否则不适用。
Solubility (other) 溶解性（其他）	Not applicable unless individual components exposed. 除非单个的组件暴露，否则不适用。

Section 10 – Stability and Reactivity 第十部分 稳定性和反应性	
Chemical Stability 化学稳定性	Stable under recommended storage conditions. 在推荐的储存条件下可以保持稳定。
Possibility of Hazardous Reactions 危险反应的可能性	None under normal processing. 正常处理下没有。
Conditions to Avoid 应避免的条件	Exposure to air or moisture over prolonged periods. 暴露在空气中或长时间受潮。
Incompatible materials 不相容材料	Acids, Oxidizing agents, Bases. 酸，氧化剂，碱。
Hazardous Decomposition Products 有危害分解物	Carbon oxides. 二氧化碳。

Section 11 – Toxicological Information 第十一部分 毒理学信息	
Irritation 刺激	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。
Sensitization 致敏	Not Applicable 不适用
Reproductive Toxicity 再生毒性	Not Applicable 不适用
Toxicologically Synergistic Materials 协同材料毒理学	Not Applicable 不适用

Section 12-Ecological Information 第十二部分 生态学信息	
General note: 通用信息：	Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

	不允许未稀释或大量的产品接触地下水、水道或污水处理系统。
Anticipated behavior of a chemical product in environment/possible environmental impact/ ecotoxicity 化学产品在环境/可能的环境预期的行为的一种生态毒性	Not Applicable 不适用

Section 13- Disposal Considerations 第十三部分-废弃处置	
Waste Treatment 废弃处置方法	Recycle or dispose of in accordance with government, state & local regulations. 建议遵照国家和地方法规处置或再利用。
Attention for Waste Treatment 废弃注意事项	Deserted batteries shouldn't be treated as ordinary trash. Shouldn't be thrown into fire or placed in high temperature. Shouldn't be dissected, pierced, crushed or treated similarly. Best disposal method is recycling. 废电池不能被当作普通垃圾。不能扔进火中或置于高温下。不能解体，刺穿，破碎或类似的处理。最好的处理办法是回收利用。

Section 14 – Transport Information 第十四部分-运输信息			
ICAO / IATA: 国际民间航空组织/国际航空运输协会：	Can be shipped by air in accordance with International Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA), DGR Packing Instructions (PI) 965 Section IA, PI 966 Section I and PI 967 Section I appropriate of IATA DGR 66th (2025 Edition) for transportation. 货物可根据民用航空组织（ICAO），TI 或国际航空运输协会（IATA）,DGR 66th (2025 版）包装说明(PI)965 Section IA，PI 966 Section I 和 PI 967 Section I 相关规定进行空运。		
UN number 联合国货物编号（UN 编号）	UN3480/UN3481		
Proper Shipping Name 运输专用名称	Lithium ion batteries / 锂离子电池 Lithium ion batteries packed with equipment / 锂离子电池与设备包装在一起		
Remark 备注	Suggested limited to a maximum of 30% SoC 荷电状态不得超过其额定容量的 30%		
Class or Div 危险性类别	9	Packing grade: 包装等级	II
UN number 联合国货物编号（UN 编号）	UN3481		
Proper Shipping Name 运输专用名称	Lithium ion batteries contained in equipment 锂离子电池安装在设备中		
Class or Div	9	Packing grade:	/

危险性类别		包装等级	
Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises. 无论是对内还是对外的运输或运输方式，用户都需要注意或遵守的特殊预防措施。			
IMDG CODE: 国际海运危险货物规则：	Shipping may be done in accordance with the IMDG Code 2024 Edition (Amdt 42-24). 可根据 IMDG Code 2024 版(Amdt 42-24)相关规定进行海运。		
UN number 联合国货物编号（UN 编号）	UN3480/ UN3481		
Proper Shipping Name 运输专用名称	Lithium ion batteries / 锂离子电池 Lithium ion batteries packed with equipment / 锂离子电池与设备包装在一起		
Class or Div 危险性类别	9	Packing grade: 包装等级	II
UN number 联合国货物编号（UN 编号）	UN3481		
Proper Shipping Name 运输专用名称	Lithium ion batteries contained in equipment 锂离子电池安装在设备中		
Class or Div 危险性类别	9	Packing grade: 包装等级	/
EmS No. 危险品应急措施编号	F-A：一般灭火程序 S-I：易燃固体（可重包装）		
ADR/ ADN: 欧洲国际陆运危险货物协定/关于内陆水道国际运输危险货物的欧洲协定：	Transport Requirements for United Nations Economic Commission for Europe (UNECE) ADR/ADN, Applicable as from 1 January 2025. 自 2025 年 1 月 1 日起需符合联合国欧洲经济委员会（UNECE）ADR / ADN 的运输要求。		
In addition, to be permitted in transport each lithium cell and battery types must have passed the applicable tests set out in Subsection 38.3 of the UN Manual of Tests and Criteria. The batteries should be well protected against short circuits. 此外，每个锂电芯和电池类型都必须通过联合国《试验和标准手册》第 38.3 节规定的适用测试。电池应做好防短路措施。			

Section 15- Regulatory information
第十五部分 法规信息

Dangerous Goods Regulations
《危险物品规则》
Recommendations on the Transport of Dangerous Goods-Model Regulations (23rd revised edition)
联合国《关于危险货物运输的建议书 规章范本》（23rd 修订版）
UNITED NATIONS “Manual of Tests and Criteria"
联合国《试验和标准手册》
International Air Transport Association (IATA)

《国际航空运输协会》（IATA）

International Maritime Dangerous Goods (IMDG Code 2024 Edition Amdt 42-24)

《国际海运危险货物规则》（IMDG Code 2024 版 Amdt 42-24）

Technical Instructions for the Safe Transport of Dangerous Goods

《危险货物安全运输技术指南》

Classification and code of dangerous goods (GB 6944-2012)

《危险货物分类和品名编号》- GB 6944-2012

2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

2012《职业安全与健康标准》危险通信标准（29 CFR 1910.1200）

Toxic Substance Control Act (TSCA)

《有毒物质控制法》（TSCA）

Code of Federal Regulations

《联邦条例》

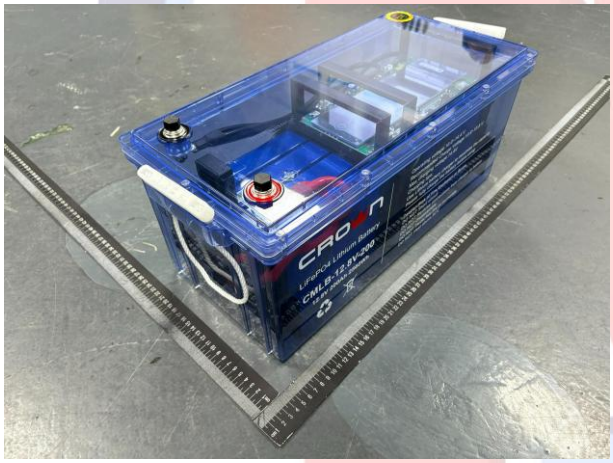
In accordance with all Federal, State and local laws

符合所有联邦、州和地方法律

Section 16- Other Information
第十六部分-其它信息

MSDS creation date: 2025 Version: 1.1

Sample photo 样品照片:





To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

本份 MSDS 中的信息只是基于我们当前所拥有的相关材料的信息而编制的，只是为了描述本品的健康、安全与环境需求，以使各有关方面能更好地了解和信任本产品。这些信息只是提供给您，以供考虑、研究和确认。其中的一些危害预防措施描述并非是唯一的。所以本份 MSDS 不能作为使用本品实现任何特定目的的保证。各有关使用者有责任预先完成本品的安全性及其他方面的测试，以评判其是否满足您的使用目的。

******End of report******

******报告结束******