MSDS Report

Applicant's name **委托方名称**	JIANGSU HIGHSTAR BATTERY MANUFACTURING CO.,LTD 江苏海四达电源有限公司
Applicant's address **委托方地址**	No.306 Heping Road(S),Qidong City,Jiangsu,China 中国江苏省启东市和平南路 306 号
Name of sample **样品名称**	Sodium-ion rechargeable cell 可充电钠离子电芯
Model 型号	NaCP71173208-160
Nominal voltage **标称电压**	2.95V
Rated capacity **额定容量**	160Ah, 472Wh
Sample Mass **样品重量**	4.65kg
Dimension 尺寸	(207.7×174.2×72.5)mm
Prepared by **编制单位**	Nuocheng Safety Testing (Shenzhen) Co., Ltd. 诺诚安全检测（深圳）有限公司 1-2/F., Building A, The Third Industrial Zone, Fenghuang, Fuyong Subdistrict, Bao'an District, Shenzhen, Guangdong, China 广东省深圳市宝安区福永街道凤凰社区第三工业区厂房 A 栋 1-2 层
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Written by编写人:
（Test Engineer
测试工程师）
Nancy Liu 刘璇

Reviewed by审核人:
（Report Reviewer
报告审核员）
Rick Huang 黄坤鸿

Approved by批准人:
（Technical director
技术负责人）
Holy Wang 王

Seal of
报告单位（盖章）
诺诚安全检测（深圳）有限公司
检测检验专用章

Material Safety Data Sheet 材料安全技术说明书

Section 1 - Product & Company Identification 第一部分 产品及企业标识	
Name of sample 样品名称	Sodium-ion rechargeable cell 可充电钠离子电芯
Manufacturer's name 制造商名称	JIANGSU HIGHSTAR BATTERY MANUFACTURING CO.,LTD 江苏海四达电源有限公司
Manufacturer's address 制造商地址	No.306 Heping Road(S),Qidong City,Jiangsu,China 中国江苏省启东市和平南路 306 号
Factory's name 工厂名称	JIANGSU HIGHSTAR BATTERY MANUFACTURING CO.,LTD 江苏海四达电源有限公司
Factory's address 工厂地址	No.306 Heping Road(S),Qidong City,Jiangsu,China 中国江苏省启东市和平南路 306 号
Contact Person 联系人	Caihui
Emergency Tel 应急电话	+86-15951421232
E-mail 邮箱	caih@highstar.com

Section 2 - Hazard 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	Inhalation,Ingestion, Skin contact and Eye contact. 吸入、食入、皮肤接触、眼睛接触。
Health Hazard 健康危害	There is no danger in normal use, the battery cannot be disassembled, opened or decomposed, and the materials or components inside are harmful. 正常使用没有危险，不能拆解、打开或分解电池，里面的材料或成分是有害的。 Inhalation: Vapors or mists from a ruptured battery may cause respiratory irritation. 吸入：破裂的电池散发出来的气雾会引起呼吸道刺激。 Ingestion: The battery ingredients or raw materials can cause severe chemical burns to the mouth, esophagus and gastrointestinal tract. 食入：电池的组成成分或原料可以导致嘴，食道和胃肠道的严重化学烧伤。 Skin: Skin contact with the battery's internal chemistry can cause severe

	irritation or burn to the skin. 皮肤：皮肤接触到电池的内部化学材料可能会导致严重的刺激或烧伤皮肤。 Eye: Eye contact with the battery's internal chemistry can cause severe irritation or burn to the eye. 眼睛：眼睛接触到电池的内部化学材料可能会导致严重的刺激或烧伤眼睛。

Section 3 – Composition/Information on Ingredients
第三部分 成分/组成的信息

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）
Polyanionic sodium positive electrode material	31.07	N/A
Carbon black	14.51	1333-86-4
Ethyl methyl carbonate	16.16	623-53-0
Sodium hexafluorophosphate		21324-39-0
Polyethylene	1.25	9002-88-4
Aluminum foil	0.76	7429-90-5
Steel mantle	19.17	N/A
Block shot	3.53	N/A
Other	13.55	N/A

Note: CAS number is Chemical Abstract Service Registry Number.

注意：CAS 号是化学文摘服务注册号。

N/A=Not apply.

N/A =不适用。

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

Inhalation 吸入	Remove source of contamination or move victim to fresh air. Obtain medical advice. 移除污染源或者将受害者移至新鲜空气处。寻求医生建议。
Ingestion	Please rinse mouth thoroughly with water. Induce vomiting under the guidance of professional personage. Please seek medical treatment in time.

食入	立即用清水漱口，在专业人士的指导下催吐，速就医。
Skin contact 皮肤接触	Take off contaminated clothing, rinse with plenty of water, if skin allergies and redness, please seek medical treatment in time. 脱下已污染的衣物，用大量的清水冲洗，若皮肤出现过敏及红肿情况请速就医。
Eye contact 眼睛接触	Irrigate with flowing water for 15 minutes. If irritation persists, please seek medical treatment in time. 用流动水冲洗 15 分钟，如刺激持续发生，速就医。

Section 5 - Fire Fighting Measures
第五部分 消防措施

Characteristics of Hazard 危险特性	Toxic fumes, gases or vapors may evolve on burning. 火灾时可释放有害浓烟、气体或者蒸汽。
Hazardous Combustion Products 燃烧产生的危险物品	Carbon monoxide, carbon dioxide, lithium oxide fumes and so on. 一氧化碳，二氧化碳，锂氧化物烟气等。
Fire-extinguishing Methods and Extinguishing Media 灭火方法及灭火剂	For small fires, can use water, dry sand and other proper fire extinguishing media. 对于小型火险，可使用水，干燥沙等合适的灭火介质。
Attention in Fire-extinguishing 灭火注意事项	Firefighting personnel shall wear gas masks and full-body firefighting suits. 消防人员须佩戴防毒面具、穿全身消防服。

Section 6 - Accidental Release Measures
第六部分 泄漏应急措施

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	Stop the leak if safe to do so. Contain the spilled liquid with dry sand

Containment 方法和材料控制	or earth. Clean up spills immediately. 出于安全，阻止泄漏，可以用干砂或沙土来遏制液体泄露，立即清理泄漏。
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（干砂或沙土）吸收溢出的材料。污染物转移到可吸收废物的容器。收集所有受污染的吸收剂，根据第 13 部分的指令处置。用洗涤剂和水清洁污染区域，收集所有受污染的洗涤水进行适当处置。

Section 7 - Handling and Storage
第七部分 操作处置与储存

Handling 操作	Do not disassemble, squeeze, or put the battery into a high temperature environment. Do not short circuit or install with incorrect polarity. 禁止拆解、挤压或投入高温环境中，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. 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。放在儿童无法接触的地方。
Other Precautions 其他要注意的防范措施	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection equipment. 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/个人防护

Engineering Controls 工程控制	No engineering controls are required for handling batteries that have not been damaged. Personal protective equipments for damaged batteries should include chemical resistant gloves and safety glasses.

	操作未破损的电池，没有工程控制要求。对于破损的电池，个人防护用品应包括化学品防护手套和安全眼镜。
Personal Protective Equipment 个人防护设备	Eye and Face Protection: Not to be considered under normal use conditions. If the electrolyte leaks, wear protective glasses and a safety mask. 眼睛和脸部保护：正常使用条件下不必考虑。如果电解液泄露，请佩戴防护眼镜和安全面罩。 Skin and Body Protection: Not to be considered under normal use conditions. If the electrolyte leaks, wear protective gloves and clothing. 皮肤和身体防护：正常使用条件下不必考虑。如果电解液泄露，请穿戴防护手套和防护服。 Respiratory Protection: Not to be considered under normal use conditions. If the electrolyte leaks or the battery vents, wear a gas mask. 呼吸系统防护：正常使用条件下不必考虑。如果电解液泄露或电池泄气，请佩戴防毒面罩。

Section 9 - Physical and Chemical Properties
第九部分 理化特性

Physical State 物理状态	Form: Solid 形态：固体
	Color: Blue 颜色：蓝色
	Odour: Normally, no odor. If leaking, smells of medical ether. 气味：正常情况下，无气味。泄漏时，医用乙醚的气味。
Change in condition 变化条件	
pH 酸碱度	No data is available 无数据可提供。
Flash Point 闪点	Not applicable. 不适用。
Flammability 易燃度	No data is available 无数据可提供。
Relative density 相对密度	No data is available 无数据可提供。

Solubility (water) 溶解性（水溶性）	No data is available 无数据可提供。

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。
Conditions to Avoid 应避免的条件	Heat above 70°C or incinerate，expose over a long period to humid conditions. 加热 70°C 以上或焚烧，长时间暴露在潮湿的条件下。
Incompatible materials 不相容材料	Acids, Oxidizing agents, Bases. 酸，氧化剂，碱。
Hazardous Decomposition Products 危害分解物	Toxic Fumes, and may form peroxides. 有毒烟雾，并可能形成过氧化物。

Section 11 - Toxicological Information
第十一部分 毒理学信息

Irritation 刺激	In the case of internal material exposure, the vapor fumes may cause irritation to the eyes and the leaking electrolyte may cause irritation to the skin. 内部物质暴露的情况下，蒸汽烟雾可能对眼睛产生刺激，泄露的电解液可能对皮肤产生刺激。
Sensitization 致敏	No data is available 无数据可提供。
Reproductive Toxicity 再生毒性	No data is available 无数据可提供。
Toxicologically Synergistic Materials 协同材料毒理学	No data is available 无数据可提供。

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到达地下水、水道或污水系统。
Anticipated behavior of a	No data is available

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	无数据可提供。

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 couldn't be treated as ordinary trash. Couldn't be thrown into fire or placed in high temperature. Couldn't be dissected, pierced, crushed or treated similarly. Best way is recycling. 废电池不能被当做普通垃圾。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。最好的办法是回收利用。

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

UN number 联合国货物编号（UN 编号）	3551 or 3552
Proper shipping name 运输专用名称	Sodium ion batteries with organic electrolyte or; 含有机电解液的钠离子电池 或； Sodium ion batteries packed with equipment with organic electrolyte or; 含有机电解液的钠离子电池与设备包装在一起 或； Sodium ion batteries contained in equipment with organic electrolyte. 含有机电解液的钠离子电池内置于设备中。
DGR 危险品规则	Can be shipped by air in accordance with International Civil Aviation Organization (ICAO) or International Air Transport Association (IATA) DGR 66th Edition (2025) Packing Instructions 976, Section I of 977 or Section I of 978 appropriately. 可根据国际民用航空组织(ICAO)或国际航空运输协会(IATA) DGR 66 版(2025)包装指令 PI976、PI977 I 或 PI978 I 适当空运。 For PI976: Limited to a maximum of 30% SoC, and paste Class 9—Batteries Label and Cargo Aircraft Only Label. 针对 PI976：荷电状态不得超过其额定容量的 30%，并粘贴 9 类电池标

	签和限货机标签。 For PI977 I or PI978 I: Paste Class 9—Batteries Label. 针对 PI977 I 或 PI978 I：粘贴 9 类电池标签。 UN Classification (Transport hazard class): Class 9 UN 分类（运输危险类别）：9 类危险品 PG Packing Group: II (PI976~977Section I) PG 包装等级: II （包装指令 976~977 第 I 部分） PG Packing Group: N/A (PI978 Section I) PG 包装等级: 不适用（包装指令 978 第 I 部分）
IMDG CODE 国际海运危险货物规则	The batteries are classified as dangerous goods according to IMDG Code 2024 Edition (Amdt 42-24). 根据 IMDG Code 2024 版(Amdt 42-24)，该电池按危险货物条件办理。 Paste Class 9—Batteries Label. 粘贴 9 类电池标签。 PG Packing Group: II (Sodium ion batteries with organic electrolyte or Sodium ion batteries packed with equipment with organic electrolyte) PG 包装等级: II （含有机电解液的钠离子电池或含有机电解液的钠离子电池与设备包装在一起） PG Packing Group: N/A (Sodium ion batteries contained in equipment with organic electrolyte) PG 包装等级: 不适用（含有机电解液的钠离子电池内置于设备中） Marine pollutant (Y/N): N 海洋污染物（Y / N）: N EmS No.: F-A, S-I EmS 编号: F-A, S-I
ADR 危险货物国际道路运输欧洲公约	The batteries are classified as dangerous goods according to ADR 2025. 根据 ADR 2025，该电池按危险货物条件办理。 Paste Class 9—Batteries Label. 粘贴 9 类电池标签。 PG Packing Group: II (Sodium ion batteries with organic electrolyte or Sodium ion batteries packed with equipment with organic electrolyte) PG 包装等级: II （含有机电解液的钠离子电池或含有机电解液的钠离子电池与设备包装在一起） PG Packing Group: N/A (Sodium ion batteries contained in equipment with organic electrolyte) PG 包装等级: 不适用（含有机电解液的钠离子电池内置于设备中）

RID 国际铁路危险货物运输规则	The batteries are classified as dangerous goods according to RID 2025. 根据 RID 2025，该电池按危险货物条件办理。 Paste Class 9—Batteries Label. 粘贴 9 类电池标签。 PG Packing Group: II (Sodium ion batteries with organic electrolyte or Sodium ion batteries packed with equipment with organic electrolyte) PG 包装等级: II （含有机电解液的钠离子电池或含有机电解液的钠离子电池与设备包装在一起） PG Packing Group: N/A (Sodium ion batteries contained in equipment with organic electrolyte) PG 包装等级: 不适用（含有机电解液的钠离子电池内置于设备中）

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

Recommendations on the Transport of Dangerous Goods-Model Regulations

《关于危险货物运输的建议书 规章范本》

Recommendations on the Transport of Dangerous Goods-Manual of Tests and Criteria

《关于危险货物运输的建议书 试验和标准手册》

Dangerous Goods Regulations

《危险品规则》

International Maritime Dangerous Goods Code

《国际海运危险货物规则》

Regulations Concerning Road Transportation of Dangerous Goods

《危险货物道路运输规则》

Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)

《危险货物国际道路运输欧洲公约》

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID)

《国际铁路危险货物运输规则》

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

《危险货物分类与代码》

Occupational Safety and Health Act (OSHA)

《职业安全与健康法案》(OSHA)

Toxic Substance Control Act (TSCA)

《有毒物质控制法》 (TSCA)

Federal Environmental Pollution Control Act (FEPCA)

《联邦环境污染控制法》 (FEPCA)

Resource Conservation and Recovery Act (RCRA)

《资源保护和恢复法案》(RCRA)

Code of Federal Regulations (CFR)

《联邦条例》(CFR)

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 其他信息

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。

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********End of MSDS Report********

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