# 材料安全数据表

## MATERIAL SAFETY DATA SHEET

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| **Prepared For**<br>申请商 | : | **Zhejiang Fudeer Electric Appliance Co., Ltd**<br>浙江福得尔电器有限公司<br>**286 Kaifa Avenue,Taizhou,Zhejiang, China**<br>中国浙江省台州市开发大道286号 |
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SHENZHEN ECT TESTING TECHNOLOGY CO.,LTD

# 材料安全数据表
# Material Safety Data Sheet

Report No.: ECTBEAB01C007D

** The MSDS is prepared based on the information provided by client. The contents and formats of this MSDS are revised as per client's request.*这份材料安全数据表是根据客户提供的信息编辑，其内容和格式按客户要求来修订。

## Section 1-Chemical Product and Company Identification
第一部分-化学品及企业标识

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| **Product Name**<br>产品名称 | Rechargeable Li-ion Battery Pack<br>可充电锂离子电池组 |
| **Model**<br>型号 | FDE-Li-24-20-NL |
| **Trade Mark**<br>商标 | N/A |
| **Ratings**<br>额定参数 | 25.6V, 20Ah, 512Wh |
| **Weight**<br>重量 | 5.4kg |
| **Manufacturer**<br>制造商 | Zhejiang Fudeer Electric Appliance Co., Ltd<br>浙江福得尔电器有限公司 |
| **Manufacturer Address**<br>制造商地址 | 286 Kaifa Avenue,Taizhou,Zhejiang, China<br>中国浙江省台州市开发大道286号 |
| **Emergency Telephone**<br>应急电话 | +86 576 88168987 |
| **Fax**<br>传真 | / |

## Section 2- Hazards Identification
第二部分-危险性概述

| | |
|---|---|
| **Emergency overview**<br>紧急情况概述 | N/A<br>不适用 |
| **Classification according to GHS**<br>GHS分类 | Not a dangerous substance according to GHS<br>不属于GHS危险物品 |
| **Label elements:**<br>标签元素 | |
| Hazard pictogram(s)<br>危险标签图 | Not Applicable<br>不适用 |
| Signal word<br>提示语 | Not Applicable<br>不适用 |
| Hazard statement(s)<br>危险声明 | Not Applicable<br>不适用 |
| **Precautionary statement(s):**<br>预防声明 | |
| Prevention<br>预防 | Not Applicable<br>不适用 |
| Response<br>反应 | Not Applicable<br>不适用 |
| Disposal<br>处理 | Not Applicable<br>不适用 |
| **Environmental hazards:**<br>环境危害 | No relevant information<br>无相关信息 |

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| **Important symptoms:**<br>重要症状 | See section 11 for more information<br>见第11部分更多信息 |

## Section 3- Composition Information
第三部分-成分信息

| **Chemical Composition**<br>化学成分 | **CAS No.**<br>CAS号 | **EINECS number**<br>EINECS 编号 | **Weight (%)**<br>重量含量（%） |
|---|---|---|---|
| Lithium iron phosphate<br>磷酸铁锂 | 15365-14-7 | 604-917-2 | 39.52 |
| Electrolyte<br>电解质 | 21324-40-3 | 244-334-7 | 24.34 |
| Graphite<br>石墨 | 7782-42-5 | 231-955-3 | 19.92 |
| Copper foil<br>铜箔 | 7440-50-8 | 231-159-6 | 7.88 |
| Aluminum foil<br>铝箔 | 7429-90-5 | 231-072-3 | 4.79 |
| SBR | 9003-55-8 | 618-370-2 | 1.11 |
| SP | 1333-86-4 | 215-609-9 | 0.83 |
| PVDF<br>聚偏氟乙烯 | 24937-79-9 | 607-458-6 | 0.83 |
| KS-6 | 7782-42-5 | 231-955-3 | 0.42 |
| CMC | 9000-11-7 | 618-326-2 | 0.36 |

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

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| **Eye contact**<br>眼睛接触 | Flush eyes with plenty of water for least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.<br>万一接触，立即用大量的清水冲洗至少15分钟，翻起上下眼脸，直到化学的残留物消失为止，迅速就医。 |
| **Skin contact**<br>皮肤接触 | Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.<br>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**<br>吸入 | Remove from exposure and move to fresh air immediately. Use oxygen if available.<br>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**<br>摄入 | Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.<br>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。 |

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

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| **Flash Point**<br>燃点 | N/A<br>不适用 |

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| **Auto-Ignition Temperature**<br>自燃温度 | N/A<br>不适用 |
| **Extinguishing Media**<br>灭火介质 | $H_2O$, $CO_2$<br>水，二氧化碳 |
| **Special Fire-Fighting Procedures**<br>特殊灭火程序 | Self-contained breathing apparatus<br>自给式呼吸器 |
| **Unusual Fire and Explosion Hazards**<br>异常火灾或爆炸 | Cell may vent when subjected to excessive heat-exposing battery contents<br>当电芯暴露于过热的环境中时，安全阀可能会打开 |
| **Hazardous Combustion Products**<br>燃烧产生的危险物品 | Carbon monoxide, carbon dioxide, lithium oxide fumes.<br>一氧化碳，二氧化碳，锂氧化物烟气 |

## Section 6- Accidental Release Measures
第六部分-泄露应急处理

**Personal precautions, protective equipment and emergency procedures:**
If the battery is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area and allow the vapors to dissipate, Avoid skin and eyes contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerated. If leakage of the battery happens, liquid could be absorbed by using sand, earth or other inert substance and contaminated area should be ventilated meantime.

**个人预防措施、保护设备和应急程序:**
如果电池被泄露，让人员离开该区域直到烟雾消散。提供最大限度的通风，清除有害气体。首选的反应就是离开这个地区并消散气体，避免皮肤和眼睛接触或吸入气体。用吸收剂清除溢出的液体然后焚烧。如果电池泄漏发生时,液体可以用砂、泥土或其他惰性物质来吸收，污染区域应该保持通风。

**Environment precautions:**
Do not allow product to reach sewage system or any water source.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.

**环境预防措施:**
不允许产品到达排水系统或任何水源。
如果渗透进排水系统或任何水源，通知相应的部门。
不允许进入下水道/表面或地下水。

**Methods and material for containment and cleaning up:**
If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules, Avoid leached substances to get into the earth, canalization or waters.

**抑制和清理材料的方法:**
如果电池外壳被拆除，少量电解液可能会泄漏。收集所有材料放进一个塑料容器。根据当地的法律法规来处置，避免可溶物质进入大地、下水道或水源。

## Section 7- Handling and Storage
第七部分-操作处置和储存

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| **Handling**<br>操作处置 | 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.<br>Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire.<br>Do not crush or puncture the battery, or immerse in liquids. |

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| | 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。<br>禁止将电池短路、过充、强制放电或扔入火中。<br>禁止挤压或刺穿电池，或将电池浸入溶液中。 |
| **Storage**<br>储存 | 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.<br>Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.<br>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、通风及温度变化较小的环境中。<br>禁止将电池接触加热设备，或将电池长时间直接暴露在阳光中。 |
| **Other Precautions**<br>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.<br>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。<br>禁止短接或将电池正负极错误的安装在设备中。 |
| **Section 8- Exposure Controls/Personal Protection**<br>第八部分-接触控制和个体防护 | |
| **Engineering Controls**<br>设计控制 | Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor.<br>Keep away from heat and open flame. Store in a cool, dry place.<br>设计局部排气通风或其它设计来控制粉尘、雾、烟雾和气体。 |
| **Personal Protective Equipment**<br>个人防护装备 | Respiratory Protection: Not necessary under normal conditions.<br>Skin and body Protection: Not necessary under normal conditions, Wear suitable protective clothing and gloves if handling an open or leaking battery.<br>Hand protection: Wear suitable gloves if handling an open or leaking battery.<br>Eye Protection: Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery.<br>呼吸防护:在正常情况下不需要。<br>皮肤和身体防护：在正常情况下不需要,如果处理一个裂开的或泄漏的电池需要穿戴适当的防护服和手套。<br>手保护：如果处理一个裂开的或泄漏的电池需要戴适当手套。<br>眼睛保护：在正常情况下不需要，如果处理一个裂开的或泄漏的电池需要戴上安全眼镜。 |
| **Other Protective Equipment**<br>其它防护装备 | Have a safety shower and eye wash fountain readily available in the immediate work area.<br>在工作区域应该有一个立即可以使用的安全淋浴和喷水洗眼器。 |
| **Hygiene Measures**<br>卫生措施 | Do not eat, drink, or smoke in work area. Maintain good housekeeping.<br>在工作区域不得进食，饮水或吸烟。 |
| **Section 9- Physical and Chemical Properties**<br>第九部分-物理和化学特性 | |
| **Form**<br>形态 | Solid<br>固体 |

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| **Color**<br>颜色 | Red<br>红色 |
| **Odour**<br>气味 | Not Applicable<br>不适用 |
| **pH**<br>酸碱度 | Not Applicable<br>不适用 |
| **Melting point/freezing point**<br>熔点/凝固点 | Not Applicable<br>不适用 |
| **Boiling Point and Boiling range**<br>沸点、沸点范围: | Not Applicable<br>不适用 |
| **Flash Point**<br>易燃度 | Not Applicable<br>不适用 |
| **Upper/lower flammability or explosive limits**<br>自燃或爆炸的上、下极限 | Not Applicable<br>不适用 |
| **Vapor Pressure**<br>蒸汽压 | Not Applicable<br>不适用 |
| **Vapor Density**<br>蒸汽密度 | Not Applicable<br>不适用 |
| **Relative density**<br>相对密度 | Not Applicable<br>不适用 |
| **Solubility in Water**<br>水溶性 | Not Applicable<br>不适用 |
| **Auto-ignition temperature**<br>自燃温度 | Not Applicable<br>不适用 |
| **Decomposition temperature**<br>分解温度 | Not Applicable<br>不适用 |
| **Evaporation rate**<br>蒸发速率 | Not Applicable<br>不适用 |
| **Flammability (soil, gas)**<br>易燃性(土壤、天然气) | Not Applicable<br>不适用 |
| **Viscosity**<br>粘性 | Not Applicable<br>不适用 |
| **Section 10- Stability and reactivity**<br>第十部分 稳定性和反应活性 | |
| **Stability**<br>稳定性 | The product is stable under conditions described Section 7<br>产品在第七部分所诉的条件下稳定 |
| **Conditions to Avoid**<br>应避免的条件 | Heat above 70°C or incinerate. Deform, Mutilate, Crush, Disassemble, Overcharge, Short circuit, Expose over a long period to humid conditions.<br>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。 |
| **Incompatible Materials**<br>不兼容的材料 | Oxidizing agents, acid, base.<br>氧化剂，酸，碱。 |
| **Hazardous Decomposition Products**<br>危险分解物 | Carbon monoxide, carbon dioxide, lithium oxide fumes.<br>一氧化碳、二氧化碳、氧化锂烟雾。 |

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| **Possibility of Hazardous Reaction**<br>危险反应的可能性 | Not Applicable<br>不适用 |
| **Section 11 – Toxicological Information**<br>第十一部分-毒理学资料 | |
| **Irritation**<br>刺激 | Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.<br>如果电芯的外壳受到机械、热或电的滥用到达一定程度，会发生刺激的风险。如果发生这种情况，可能会刺激皮肤、眼睛和呼吸道。 |
| **Sensitization**<br>致过敏 | Not Applicable<br>不适用 |
| **Neurological Effects**<br>影响神经系统 | Not Applicable<br>不适用 |
| **Teratogenicity**<br>致畸 | Not Applicable<br>不适用 |
| **Reproductive Toxicity**<br>再生毒性 | Not Applicable<br>不适用 |
| **Mutagenicity (Genetic Effects)**<br>诱变(遗传效应) | Not Applicable<br>不适用 |
| **Toxicologically Synergistic Materials**<br>附带材料毒理性 | Not Applicable<br>不适用 |
| **Section 12- Ecological Information**<br>第十二部分-生态学资料 | |
| **Ecological Toxicity**<br>生态毒性 | Not Applicable<br>不适用 |
| **Mobility in soil**<br>在土壤中的流动性 | Not Applicable<br>不适用 |
| **Persistence and Degradability**<br>持久性和分解性 | Not Applicable<br>不适用 |
| **Bioaccumulation potential**<br>生物聚积 | Not Applicable<br>不适用 |
| **Other Adverse Effects**<br>其他不利影响 | Not Applicable<br>不适用 |
| **Section 13- Disposal Considerations**<br>第十三部分-废弃处置 | |
| **Product disposal recommendation**<br>产品废弃处理建议 | Observe local, state and federal laws and regulations.<br>遵守当地、州和联邦法律和法规。 |
| **Packaging disposal recommendation** | Disposal must be made according to official regulations<br>废弃处理必须根据当地法规 |

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| 包装处理建议 | |

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

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| **Label for conveyance**<br>运输标签 | Battery Label<br>电池标签 | |
| **UN Number**<br>UN编号 | UN 3480 or UN 3481<br>UN 3480 或 UN 3481 | |
| **Transport hazard class(es)**<br>运输风险类别 | 9 | |
| **Packing group**<br>包装等级 | 965 or 966 | II |
| | 967 | -- |
| **Marine pollutant**<br>海洋污染物 | No<br>无污染 | |
| **UN Proper shipping name**<br>联合国运输专用名称 | Lithium ion Batteries (Including lithium ion polymer batteries)<br>锂离子电池(包括锂离子聚合物电池)<br>Lithium ion Batteries packed with equipment (Including lithium ion polymer batteries)<br>锂离子电池和设备包装在一起(包括锂离子聚合物电池)<br>Lithium ion Batteries contained in equipments (Including lithium ion polymer batteries)<br>设备里内含锂离子电池(包括锂离子聚合物电池) | |
| **ICAO/IATA**<br>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 67th Packing Instructions Section IA of 965 or Section I of 966～967 appropriately.<br>可根据国际民用航空组织(ICAO), TI或国际航空运输协会(IATA) DGR 67th版本包装说明965第IA节规定或966～967第I节规定进行空运 | |
| **IMDG CODE**<br>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).<br>可根据 IMDG Code 2024 版（Amdt 42-24）相关规定进行海运。 | |
| **DOT**<br>美国运输部 | Other requirements for the US Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185.<br>美国运输部（DOT）有害物质规则 C 分章中的其他规定，运输符合要求 49 CFR 173.185。 | |
| **ADR/ ADN**<br>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.<br>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。 | |

The dangerous goods regulations require that each battery design be subject to tests contained in Section 38.3 of the UN Manual of Tests and Criteria prior to being offered for transport.
危险品规例规定，运输前，每一个电池设计须通过联合国试验和标准手册38.3节所载的测试。

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

**Law information**
**法律信息**

《Dangerous Goods Regulations》
《危险物品规则》
《Recommendation on the Transport of Dangerous Goods Model Regulations》
《对危险货物运输的有关规定的建议》
《International Maritime Dangerous Goods》
《国际海运危险货物规则》
《Technical Instructions for the Safe Transport of Dangerous Goods》
《危险品安全运输技术指令》
《Classification and code of dangerous Goods》
《危险货物分类和品名编号》
《Consumer Product Safety Act》(CPSA)
《消费产品安全法》
《Federal Environmental Pollution Control Act》(FEPCA)
《联邦环境污染控制法》
《Resource Conservation and Recovery Act》(RCRA)
《资源保护及恢复法案》
《European Agreement concerning the International Carriage of Dangerous》
《国际危险货物道路运输欧洲协定》
《Regulations concerning the International Carriage of Dangerous》
《国际危险货物铁路运输欧洲协定》
In according with all Federal, State and local laws.
根据所有联邦、州和地方法律。

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

The information above is believed to be accurate and represents the best information currently available to us. However, concorde makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

上面的信息被认为是准确代表了目前最好的信息提供给我们。然而,飞机没有对商品性能保证或任何其他保证,包括明示或暗示,对这类信息的使用我们不承担责任。用户应作出自己的调查，以确定是否适合其特定用途的信息。虽然在此处所包含的数据的准备已经采取了合理的预防措施,这是仅为你提供的信息、考虑和调查。这个化学品安全技术说明书为本产品提供了安全操作指南和使用指南，它并不能对所有可能发生的情况提供建议，因此，您特殊使用该产品应先进行评估，以确定是否需要额外的预防措施。

**-- End of Report --**
**-- 报告结束 --**