TCT 通测检测
TESTING CENTRE TECHNOLOGY

Material Safety Data Sheet (MSDS)
化学品安全技术说明书（MSDS)

TCT260818M007

Applicant's Name: **委托方名称:**	DYNESS DIGITAL ENERGY TECHNOLOGY CO., LTD. 大秦数字能源技术股份有限公司
Applicant's Address: **委托方地址:**	Building 1&2, 7th–8th Floors, Building 3, No. 56-58 Nanhu Road, Chengnan Subdistrict, Wuzhong District, Suzhou City, Jiangsu Province 江苏省苏州市吴中区城南街道南湖路 56-58 号融新产业园二期 1#2#整栋、3#楼 7F-8F
Name of Sample: **样品名称:**	Rechargeable Li-ion Battery（LFP） 可充电锂离子电池
Model: **型号:**	S51314
Nominal Voltage: **标称电压:**	51.2V
Rated Capacity: **额定容量:**	314Ah
Nominal Energy: **标称能量:**	16.08kWh
Weight: **重量:**	115.00kg
Size: (L×W×T) **尺寸:**	(770.0×425.0×230.0)mm
Prepared By: **编制单位:**	Shenzhen TCT Testing Technology Co., Ltd. 深圳市通测检测技术有限公司
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No.: **编号:**	TCT260818M007

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SHENZHEN TCT TESTING TECHNOLOGY CO., LTD. TCT

Section 1- Identification of the substance/mixture and of the company/undertaking

第一部分 物质或混合物和供应商的标识

1.1 Product identifier 产品标识

Name of Sample 样品名称	Rechargeable Li-ion Battery（LFP） 可充电锂离子电池
Model 型号	S51314

1.2 Relevant identified uses of the substance or mixture and uses advised against 产品的推荐用途和限制用途

Recommended Use 建议用途	No information available 无资料
Uses advised against 限制用途	No information available 无资料

1.3 Details of the supplier of the safety data sheet 供应商的详细资料

Manufacturer's Name 制造商名称	DAQIN NEW ENERGY TECHNOLOGY (TAIZHOU) CO., LTD. 大秦新能源科技（泰州）有限公司
Manufacturer's Address 制造商地址	No.511 Chenzhuang West Road, Sanshui Street, Jiangyan District, Taizhou City, Jiangsu Province 江苏省泰州市姜堰区三水街道陈庄西路 511 号
Factory Name 生产厂名称	DAQIN NEW ENERGY TECHNOLOGY (TAIZHOU) CO., LTD. 大秦新能源科技（泰州）有限公司
Factory Address 生产厂地址	No.511 Chenzhuang West Road, Sanshui Street, Jiangyan District, Taizhou City, Jiangsu Province 江苏省泰州市姜堰区三水街道陈庄西路 511 号
Phone 电话	+86 400 666 0655
Fax 传真	/
E-mail 邮箱	sales@dyness-tech.com

1.4 Emergency telephone number 应急电话

+86 400 666 0655

Section 2- Hazards Identification

第二部分 危险标识

2.1 Classification of the substance or mixture 物质或混合物的分类

According to the classification requirements of the 11th revision of the United Nations GHS system
根据联合国 GHS 制度第 11 修订版要求分类
Not applicable (Not within the scope of the 11th revised edition of the UNITED NATIONS GHS system.)
不适用（不在联合国 GHS 制度第 11 修订版范围内）

2.2 Label elements 标签要素

Symbols/Pictograms	Not applicable
象形图	不适用
Signal word	Not applicable
信号词	不适用
Hazard Statements	Not applicable
危险说明	不适用

Precautionary statements 防范说明

Prevention	Not applicable
预防措施	不适用
Response	Not applicable
事故响应	不适用
Storage	Not applicable
安全储存	不适用
Disposal	Not applicable
废弃处置	不适用

2.3 Hazard description 危害描述

Contact with the electrolyte of battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. Fumes may cause dizziness or suffocation.
与电池电解液接触可能会刺激皮肤、眼睛和粘膜。火灾会产生刺激性、腐蚀性和/或有毒气体。烟雾可能导致头晕或窒息。
Using the battery under normal conditions according to the manufacturer's instructions is not hazardous. In the case of improper use, there is a risk of rupture, fire, hot, leakage of internal components, and may cause accidental losses. Improper use includes, but is not limited to, the following conditions: prolonged charging, short circuit, fire exposure, hard object impact, sharp object puncture, fragmentation and rupture.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、内部成分泄露的危险，并可能造成意外损失。使用不当的行为包括但不仅限于下列情况：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

Article 物品

Chemical Name **化学名称**	**CAS No.** **化学文摘号**	**Content%** **百分含量 %**
Lithium Iron Phosphate ($LiFePO_4$) 磷酸铁锂	15365-14-7	20~40
Graphite 石墨	7782-42-5	10~20
Iron 铁	7439-89-6	10~20
Aluminum Foils 铝箔	7429-90-5	5~10
Copper Foils 铜箔	7440-50-8	1~10
Nickel 镍	7440-02-0	1~5
Other 其他	N/A	1~5

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

4.1 Description of first aid measures
急救措施的描述

General advice
一般建议
In case of accident or unwellness, seek medical advice immediately.
如果发生意外或不适，立即寻求医疗帮助。

Inhalation
吸入
If fumes or combustion products are inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
如果吸入烟气或燃烧的产物，迅速脱离现场至空气新鲜处，保持呼吸通畅，若感到不适，寻求医生帮助。

Ingestion
摄入
Give water to rinse out mouth, then drink plenty of water, vomiting, and go to a doctor.
用清水冲洗嘴巴，然后喝大量的水，催吐，并就医。

Eye contact
眼睛接触
Keep eyelids apart and away from eye and moving the eyelids by lifting the upper and lower lids occasionally, flush eyes with plenty of water or saline water for at least 15 minutes, call a physician if irritation persists.
提起眼睑，用流动清水或生理盐水冲洗至少 15 分钟，若仍有刺激感，立即就医。

Skin contact
皮肤接触
No apparent symptoms. If skin irritation persists, call a physician.
无明显症状，如果皮肤出现持续刺激，请就医。

Protecting of first-aiders 急救人员的防护	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination. 确保医护人员了解产品的危害特性，并采取自身防护措施，以保护自己和防止污染传播。

4.2 Most important symptoms and effects, both acute and delayed
最重要的症状和效果,急性和延迟

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
有限的证据表明反复或长期职业接触可能会产生涉及器官或生化系统累积性的健康影响

4.3 Indication of any immediate medical attention and special treatment needed
紧急医疗处理和特殊处理的说明

Treat symptomatically，Symptoms may be delayed.
根据症状治疗，注意症状可能会出现延迟。

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

5.1 Extinguishing media 灭火介质

Suitable extinguishing media 合适的灭火剂	Use fire extinguishing media suitable for the surrounding environment 使用适用于周围环境的灭火介质
Unsuitable extinguishing media 不合适的灭火剂	No information available 无资料

5.2 Special hazards arising from the substance or mixture 源于此物质或混合物产生的特殊危害

May decompose upon combustion to generate irritating, corrosive or toxie fumes. Fumes may cause dizziness or suffocation.
燃烧时可能分解，产生刺激性、腐蚀性或有毒烟雾。烟雾可能引起头晕或窒息。

5.3 Advice for firefighters 对消防人员的建议

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear;
消防人员应佩戴自给式呼吸器和全套的消防服；
Prevent, by any means available, spillage from entering drains or water courses;
用任何方式，防止泄漏进入下水道或河道；
Use water delivered as a fine spray to control fire and cool adjacent area.
用水作为一个很好的喷雾控制火和冷却的邻近区域。

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

6.1 Personal precautions, protective equipment and emergency procedures
个人预防措施、防护装备和应急程序

If the battery material 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, dispose the case after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.
如果电池材料被释放，请撤离该区域，直到烟雾消散。提供最大程度的通风，清除有害气体。最好的反应是离开该区域，在电池冷却和蒸汽消散后处理掉外壳。提供最大程度的通风。避免皮肤和眼睛接触或吸入蒸汽。

6.2 Environmental precautions
环境保护措施

Prevent product from entering drains
防止产品进入下水道。

6.3 Methods and material for containment and cleaning up
收集和清理的方法和材料

Pick up and transfer to properly labeled containers. Avoid generation of dust
收集和转移到合适的带标签的容器中，避免落灰。

6.4 Reference to other sections
参考其他部分

Personal Protective Equipment advice is contained in Section 8 of the MSDS.
个人防护设备建议见 MSDS 第 8 部分。
Disposal considerations advice is contained in Section 13 of the MSDS.
废弃处置建议见 MSDS 第 13 部分。

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

7.1 Precautions for safe handling 安全操作注意事项

Specific safe handling advice: Never throw out cells in a fire or expose to high temperatures. Do not soak cells in water and seawater. Do not expose to strong oxdizers. Do not give a strong mechanical shock or throw down. Never disassemble, modify or deform. Do not connect the positive terminal to the negative terminal with electrically conductive material.
具体的安全处理建议:不要将电池扔进火中或暴露在高温下。不要将电池浸泡在水中或海水中。不要暴露在强氧化剂中。不得造成强烈的机械冲击或摔倒。切勿拆卸、修改或变形。请勿用导电材料连接正极和负极。

7.2 Conditions for safe storage, including any incompatibilities
安全储存条件，包括任何不相容性

Do not place the battery cell near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in shortened battery cell life and degrade performance. Store in cool place. Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids. Equipped with corresponding varieties and number of fire equipment and leakage emergency treatment equipment.
请勿将电池单体放置在加热设备附近，也不要长时间暴露在阳光直射下。温度升高会缩短电池寿命，降低电池性能。保存在阴凉的地方。不兼容产品:导电材料、水、海水、强氧化剂、强酸。配备相应品种和数量的消防设备和泄漏应急处理设备。

7.3 Reference to other sections 特定用途

In addition to use mentioned in the Section 1.2, unforeseen other specific end uses.
除第 1.2 部分提及的用途外，未预见其它具体用途。

Section 8 - Exposure Controls/Personal Protection
第八部分 接触控制和个体防护

8.1 Control parameters 控制参数

Occupational Exposure Limit, OEL 职业接触限值	No relevant regulations 无相关规定
Biological limit values 生物限值	No relevant regulations 无相关规定
Predicted No Effect Concentration（PNEC）预测的无效应浓度	No relevant regulations 无相关规定
Derived No effect level, DNEL 衍生的无效应水平	No relevant regulations 无相关规定

8.2 接触控制 (Exposure controls)

Engineering Controls 工程控制	Ensure adequate ventilation, especially in confined areas, Ensure that eyewash stations and safety showers are close to the workstation location, Use explosion-proofelectrical/ventilating/lighting/equipment, Set up emergency exit and necessary risk-elimination area. 保持充分的通风，特别在封闭区内；确保在工作场所附近有洗眼和淋浴设施；使用防爆电器、通风、照明等设备；设置应急撤离通道和必要的泄险区。

Personal protective equipment
个人防护设备

Eye protection 眼睛防护	Must wear appropriate anti-corrosion goggles. Wash hands or take a shower after working 必须佩戴合适的防腐蚀护目镜。
Hand protection 手部防护	Must wear acid and alkali resistant chemical protective gloves. 必须戴耐酸碱的化学防护手套。
Respiratory protection 呼吸系统防护	Must wear appropriate personal respiratory protective equipment. 必须佩戴合适的个人呼吸防护用品。
Skin and body protection 皮肤和身体防护	Must wear acid and alkali resistant chemical protective clothing. 必须穿抗酸碱化学防护服。

Section 9- Physical and Chemical Properties

第九部分 理化特性

9.1 Information on basic physical and chemical properties 理化特性

Physical state **物理状态**	Solid 固体
Colour **颜色**	White 白色
Odor **气味**	Odorless 无气味
Odor threshold **嗅觉阈值**	Not applicable 不适用
pH **pH 值**	Not applicable 不适用
Melting/freezing point **熔点/凝固点**	Not applicable 不适用
Boiling Point, initial boiling point and Boiling range **沸点/沸腾范围**	Not applicable 不适用
Flash Point (Closed cup, °C) **闪点(闭杯，°C)**	Not applicable 不适用
Evaporation rate **蒸发率**	Not applicable 不适用
Flammability **可燃性**	No information available 无资料
Upper/lower flammability or explosive limits **可燃性或爆炸性上/下限**	No information available 无资料
Vapor pressure **蒸汽压**	Not applicable 不适用
Vapor Density (Air = 1) **相对蒸汽密度（空气=1)**	Not applicable 不适用
Density/relative density (Water=1) **相对密度(水=1)**	Not applicable 不适用
Solubility **溶解性**	Not applicable 不适用
n-octanol/water partition coefficient **辛醇/水分配系数**	Not applicable 不适用
Autoignition temperature **自燃温度(°C)**	Not applicable 不适用
Decomposition temperature **分解温度(°C)**	No information available 无资料

Kinematic viscosity(mm²/s)	Not applicable
运动粘度(mm²/s)	不适用

9.2 Other information 其他信息

No information available
无资料

Section 10 -Stability and Reactivity
第十部分 稳定性和反应性

10.1 Reactivity 反应性

Contact with incompatible substances can cause decomposition or other chemical reactions.与不相容物质接触可发生分解或其它化学反应。

10.2 Chemical stability 化学稳定性

Stable under proper operation and storage conditions.
在正确的使用和存储条件下是稳定的。

10.3 Possibility of hazardous reactions 危险反应的可能性

In contact with oxidants causes severe reactions, and may cause a fire or explosion. Flammable, its gas or powder, if in contact with air, may form explosive mixtures. In contact with metal alkoxides may cause a fire.
与氧化剂反应剧烈，有引起燃烧爆炸的危险。具有可燃性，其蒸气（或粉末）与空气接触可形成爆炸性混合物。与金属烷氧化物接触会发生着火。

10.4 Conditions to avoid 避免的条件

Do not subject battery to mechanical shock. Keep away from open flames, high temperature.
不要使电池受到机械冲击。远离明火、高温。

10.5 Incompatible materials 禁配物

Conductive materials, water, seawater, strong oxidizers and strong acids.
导电材料、水、海水、强氧化剂、强酸。

10.6 Hazardous decomposition products 有害的分解产物

Carbon oxides, other irritating and toxic gases.
碳氧化物、其他刺激性和有毒气体。

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

11.1 Information on hazard classes 危险类别信息

Acute toxicity **急毒性**	According to the available information, it does not meet the classification criteria. 根据现有资料，不符合分类标准。
Skin corrosion/irritation **皮肤腐蚀/刺激**	In the event of exposure to internal contents, vapor fumes may be very irritating to the skin and eyes. 如果在内容物暴露的情况下，蒸汽烟雾可能对皮肤和眼睛非常刺激。

Serious eye damage/eye irritation	In the event of exposure to internal contents, vapor fumes may be very irritating to the skin and eyes.
严重眼损伤/眼睛刺激	如果在内容物暴露的情况下，蒸汽烟雾可能对皮肤和眼睛非常刺激。
Sensitization	Not applicable
致敏作用	不适用
Germ cell mutagenicity	Not applicable
生殖细胞突变性	不适用
Carcinogenicity	Not applicable
致癌性	不适用
Reproductive toxicity	Not applicable
生殖毒性	不适用
STOT - single exposure	Not applicable
特定目标器官毒性-单次接触	不适用
STOT - repeated exposure	Not applicable
特定目标器官毒性-反复接触	不适用
Aspiration hazard	Not applicable
吸入性危害	不适用

11.2 Information on other hazards 其他危险信息

Endocrine disrupting properties
内分泌干扰物特性
No information available
无可用资料

Other Information 其他信息
See Section 11.1
见第 11.1 节

Section 12-Ecological Information
第十二部分 生态学信息

12.1 Toxicity 水毒性
No information available
无可用资料

12.2 Persistence and degradability 持久性和降解性
No information available
无可用资料

12.3 Bioaccumulative potential 生物积累的潜在可能性
No information available
无可用资料

12.4 Mobility in soil 土壤中移动性
No information available
无可用资料

12.5 Results of PBT and vPvB assessment PBT 和 vPvB 的结果评价
No information available
无可用资料

12.6 Endocrine disrupting properties 内分泌干扰物特性

No information available
无可用资料

12.7 Other adverse effects 其他不利影响

No information available
无可用资料

Section 13 – Disposal Considerations
第十三部分 废弃处置

Waste treatment methods 废弃物处置方法

Product disposal recommendation **产品处理建议**	National and local regulations should be referred to before disposal. 处置之前应参阅国家和地方有关法规。
Packaging disposal recommendation: **包装处理建议**	Packaging disposal recommendation: Containers may be recycled or re-used. Observe National and local regulations. 容器可以回收或者重用，遵守国家和地方有关法规。
Disposal recommendations **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 空运 (DGR 67th)	**IMDG-CODE 海运危规 (Amdt 42-24)**	**ADR 公路运输 (ADR 2025)**
14.1 UN number or ID number 联合国危险货物编号		
3480 & 3481	3480 & 3481	3480 & 3481
14.2 Proper shipping name 正式运输名称		
Lithium ion batteries (including lithium ion polymer batteries) or; 锂离子电池(包括锂离子聚合物电池)或; Lithium ion batteries packed with equipment (including lithium ion polymer batteries) or; 与设备一起包装的锂离子电池(包括锂离子聚合物电池)或; Lithium ion batteries contained in equipments (including lithium ion polymer batteries). 包含在设备中的锂离子电池(包括锂离子聚合物电池)。		
14.3 Transport hazard class(es)运输危害分类		
9	9	9
14.4 Packing Group 包装等级		

II (PI965 Section IA, 966 Section I) or N/A (PI967 Section I) II (包装说明 965 第 IA 部分,966 第 I 部分)或不适用(包装说明 967 第 I 部分)		
14.5 Marine pollutant 海洋污染物		
No.否	No.否	No.否
14.6 Special precautions for user 用户特别注意事项		
Can be shipped by air in accordance with international Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA) DGR Packing Instructions (PI) PI965 Section IA, PI966 and PI967 Section I appropriately. 可根据国际民用航空组织（ICAO），TI 或国际航空协会（IATA）DGR 包装说明（PI）PI965 第 IA 部分，PI966 和 PI967 第 I 部分相关规定进行空运	International Maritime Dangerous Goods Code 《国际海运危险货物规则》（IMDG CODE）相关规定	European Agreement concerning the International Carriage of Dangerous Goods by Road 《国际危险货物道路运输欧洲协定》（ADR）相关规定

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. UN38.3 Report No.: TCT260818B007.

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。UN38.3 报告编号：TCT260818B007。

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

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture 针对该物质或混合物的安全，健康和环境法规/立法

International chemical inventory
国际化学品名录

With regard to transport, the flowing regulations are cited and considered:
关于运输,引用和考虑了以下法规：

Recommendations on the Transport of Dangerous Goods Model Regulations (TDG)
关于危险货物运输的建议书规章范本(TDG)

International Civil Aviation Association Dangerous Goods Regulation (IATA-DGR)
国际民用航空协会《危险品规则》(IATA-DGR)

International Maritime Dangerous Goods Code (IMDG-CODE)
国际海运危险货物规则(IMDG-CODE)

International Railway Transport Dangerous Goods Regulations (RID)
国际铁路运输危险货物规则 (RID)

Agreement on the International Carriage of Dangerous Goods by Road (ADR)
国际公路运输危险货物协定(ADR)

Agreement on the International Carriage of Dangerous Goods by Inland Waters (ADN)
国际内河运输危险货物协定（ADN）

Recommendations on the Transport of Dangerous Goods-Manual of Tests and Criteria
联合国《关于危险货物运输的建议书 试验和标准手册》

International Air Transport Association (IATA)
《国际航空运输协会》（IATA）

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
《危险货物分类和品名编号》

OSHA Hazard Communication Standard
《职业安全与健康标准》危险通信标准

Section 16 – Other Information
第十六部分 其他信息

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