

深圳市正胜新 能源有限公司	PRODUCT SPECIFICATION	DOC NO.: PS-21700T ZS50T-01
		REV. : A.0
		SHEET : 1 OF 13

Specification Approval Sheet(cell)

产 品 规 格 书 (电 芯)

Customer Name 客户名称 _____

Cell Model 电芯型号 21700T ZS50T

Prepared by制作	Checked by审核	Approved by批准
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Customer Approved	Approved by 批准	Date 日期
客户承认		
(Stamp)		
(盖章)		

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1. Scope 使用范围

本规格书适用于深圳市正胜新能源有限公司生产的可充电圆柱型锂离子电池的产品性能指标

2. Model 型号

21700T ZS50T

3. Reference standard参考标准

GB/T 31241 UL1642

4. Specification 产品参数

NO.	Items项目	Specifications规格		
1	Nominal voltage标称电压	3.7V		
2	Charge cut-off voltage充电截止电压	4.2V		
3	Discharge cut-off voltage放电截止电压	2.5V		
4	Minimal capacity最小容量	4700mAh 0.2C		
5	Typical capacity典型容量	4800mAh 0.2C		
6	Standard charge method 标准充电	Charging the cell initially with constant current at 0.2C and then with constant voltage at 4.2V till charge current declines to 0.02C. 先以0.2C恒流充电，当电芯电压达到4.2V后，改为恒压充电直到充电电流小于或等于0.02C。		
7	Max charge rate 最大充电倍率	2C		
8	Max discharge rate 最大放电倍率	2C		
9	Operating temperature 工作温度	Charge temperature 充电温度	0~45℃ （0~15度0.2C充电）	
		Discharge temperature 放电温度	-20~60℃	
10	Initial Impedance初始内阻	≤20m Ω	交流阻抗 AC 1kHz	
11	Cell Voltage of shipment 出货电压	≥3.65V		
12	Dimension 尺寸规格（附录1）	直径21.2±0.2mm，高度71±0.2mm		
13	Storage temperature 储存温度	3 months三个月内	-20℃ ~+45℃	The capacity for a long time storage shall be 60~70% range
		6 months六个月内	23℃±2℃	
		Long Time Storage 长期存储	23℃±2℃	长期存储容量为60%~70%
		Humidity湿度	60%±20%	

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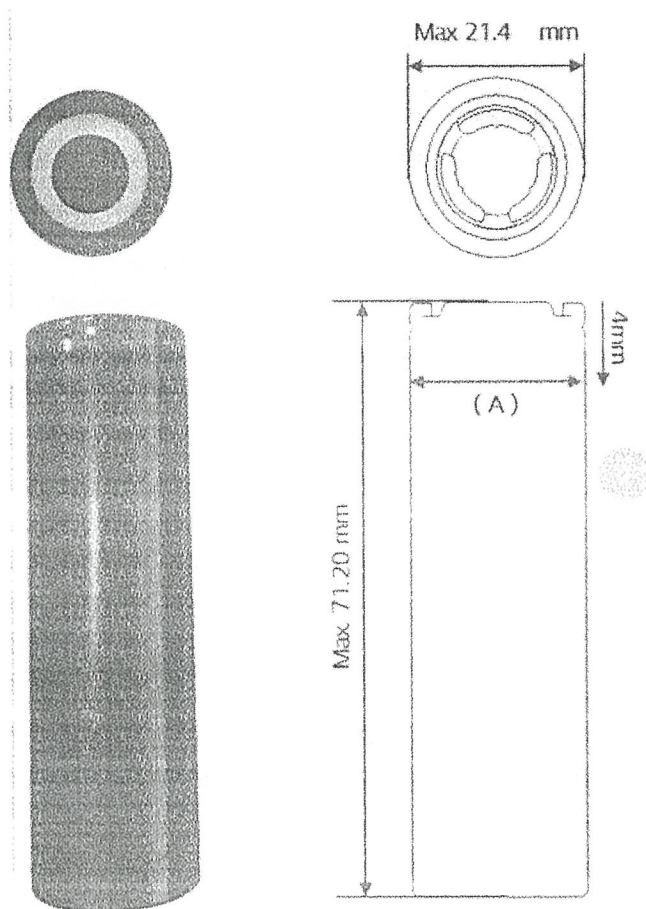
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5. Cell Drawing电芯外形尺寸示意图 (附录1)



MCR 21700T
3.7V 2550T
19 28.0001201

5000mAh
18.5Wh

注: 喷码说明

19 28 0001201

年份 周期 序列号

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6. Cell Performance Criteria电芯性能检查及测试			
6.1 Visual inspection外观检查 There shall be no such defect as scratch, flaw, crack, and leakage, which may adversely affect Commercial value of the cell. 不允许有影响电芯价值的外观缺陷例如:裂纹、裂缝、泄漏等。			
6.2 Standard environmental test condition 标准测试环境 Unless otherwise specified, all tests stated in this Product Specification are conducted at below condition: 除非有其他特殊说明, 本规格书中所有测试都在以下环境条件进行: Temperature温度 : 25℃ ~ 30 ℃ , Humidity相对湿度: 60 ± 20%			
6.3 Electrical characteristics 充放电性能			
NO.	Items 项目	Test Method and Condition测试方法	Criteria标准
1	Charge/Discharge Cycle 充放电循环	The capacity on 0.2C discharge shall be measured after 300 cycles Of 0.2C charge and discharge at 25±2℃. 25±2℃条件下0.2C充放电循环300次。	Capacity ≥ 80% 容量 ≥ 80%
2	Retention Capability 荷电保持能力	After full charging, storing the battery 28 days with 20 ± 5℃ condition, and then staying 1 hours with discharge current of 0.2C till 3.0V cut-off voltage. 电芯满充电后, 在20±5℃的环境条件下存放28天, 然后以0.2C 电流连续放电至2.5V终止电压。	Capacity ≥ 85% 容量 ≥ 85%
※ Typical capacity典型容量 The capacity means the average discharge capacity of the cell, which is measured with discharge current of 0.5C with 3.0V cut-off voltage after the standard charge at 25℃ ~ 30 ℃ environment temperature, unit: mAh 典型容量指25℃ ~ 30 ℃温度下, 以0.5C电流放电至终止电压时所放出容量对应的容量分布中心值 单位为mAh。			
※ Charge/Discharge current rate充放电电流倍率 Charge/Discharge current rate: AC(Ah)=A*Minimal capacity (mAh) , for example, 0.02C=0.02*Minimal capacity 充放电电流倍率: AC(Ah)=A*最小容量 (mAh) , 例如, 0.02C=0.02*最小容量			

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6.5 Safety 安全性能

No.	Items 项目	Test Method and Condition测试方法	Criteria标准
1	Overcharge 过充	After discharge to limit voltage, charged at constant current of 1C and constant voltage of 4.6V. While voltage reaches to the max ,if charging continued over 7 hours or temperature is 20% less than the top , close the test. 电芯放电至终止电压后, 用1C电流和4.6V的极限电压充电, 电压达到最大值后, 当充电时间大于7h或者温度降至比峰值低20%时终止测试。	No fire, no explosion 不起火、不爆炸
2	Over Discharge 过放	After standard charging, discharge the cells for 2.5 hours with current of 0.5C. 将电芯满充电后, 以0.5C的电流放电2.5小时。	No fire, no explode 不起火、爆炸
3	Drop 由跌落	Charge end, let the cells or batteries were dropped from a height of 1m to a concrete surface,and each cell is to be dropped one time from each plane total of 6 times 将电芯满充电后, 将电芯从1米的高度自由跌落到水泥地面上, 每个电芯每个面跌落1次, 总共跌6次	No fire, no explode 不起火, 不爆炸
4	Short-Circuit Test 短路测试	After standard charge, the battery is to be short-circuited by connecting the positive and negative terminals of the battery with copper wire having a maximum resistance load of 0.1Ω. 标准充电后, 电池应在外电路总电阻不大于0.1Ω的铜线连接下进行短路试验。	No explosion, no fire. The temperature of the exterior cell casing shall not exceed 150℃. 不爆炸, 不起火, 电池外部温度不超过 150℃
5	Heating 热冲击	After standard charging, put cell in the baking oven and start , the temperature up to 130℃ , remain for 30minutes at that temperature. 将电芯满充电后, 放置于热箱中, 温度以 (5±2℃) /min的速率升至130℃±2℃并保温30min。	No fire, no explosion 不起火、不爆炸

7. Others 其他事项

Any matters that this specification doesn't cover should be conferred between the customer and Novel
任何本规格书中未提及的事项, 需要经双方协商确定。

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8 Appendix 附录

Handling Precautions and Guideline For Rechargeable Batteries
对可再充电电芯操作指引和注意事项

Foreword

This document of 'Handling Precautions and Guideline Rechargeable Batteries' shall be applied to the battery cells manufactured by ZS.

前言

“对可再充电电芯操作指引和注意事项”的文件仅适用于由正胜制作的电芯。

Statement (1):

Customers are requested to contact ZS in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions

声明(1):

如果客户需要其他方面的说明或工作条件与规格书内容不一致 请客户提前和正胜公司联系。 客户可以要求验证在规格书提供的条件下的特性和安全性能的测试

Statement (2):

ZS will take no responsibility for any accident when the cell is used under other conditions than those described in this Document.

声明(2):

对于没有按规格书提供的条件而其他条件下使用导致电芯出现事故 正胜公司将不承担任何责任。

Statement (3):

ZS will inform, in a written form, customers of improvement(s) regarding proper usage and handling of cells, if it is deemed necessary.

声明(3):

如果客户需要, 正胜公司将以书面形式, 提供关于电芯的正确使用和操作方法的改进

Appendix -A Charge

附录-----A 充电

1.Charging current充电电流

Charging current should be less than the maximum value specified in the Product Specification. Charging with higher current than recommended value may cause damage to cells' electrical, mechanical, and safety performance and could lead to heat generation or leakage.

充电电流应小于产品规格书里提到的最大充电电流 没有按照推荐值而用大电流充电可能会产生电芯的电气、机械和安全性能事故, 会导致发热或漏液。

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2.Charging Voltage充电电压

Charging shall be done by voltage less than that specified in the Product Specification (4.2V/cell). Charging beyond 4.3V, which is the absolute maximum voltage, must be strictly prohibited. The charger and protection circuit of battery pack shall be designed to comply with this condition. It is very dangerous that"&" charging with higher voltage than the maximum value and may cause damage to the cell electrical, mechanical safety performance and could lead to heat generation or leakage.

充电电压应小于产品规格书里提到的电压4.2V/cell。充电电压禁止超过最大值4.3V，充电器要和电芯使用条件相符合。没有按照规格书提供的电压而用高电压充电将会产生电芯的电气、机械和安全性能事故，会导致发热或电芯燃烧，这是非常危险的。”

3.Charging temperature充电温度

The cell shall be charged within the specified temperature range in the Product Specification.

电芯应当在产品规格书中指定的温度范围内充电。

4.Prohibition of Reverse Charge禁止反向充电

Reverse charge is prohibited. Cells shall be connected correctly. The polarity has to be confirmed before wiring. In case of the cell is connected improperly, the cell cannot be charged. Simultaneously, the reverse charging may cause damage to the cell which may lead to degradation of cell performance and damage the cell safety, and could cause heat generation or leakage.

禁止反向充电。电芯按照正确方法连接，焊接导线之前，确定电芯极性。在不正确连接情况下，电芯不能充电。同时，反向充电可能对电芯有破坏性将会导致电芯性能的退化和危害电芯安全性能，产生发热和漏液现象。

Appendix -B Discharge

附录-----B 放电

1. Discharge Current放电电流

The cell shall be discharged at less than the maximum discharge current specified in the Product Specification. High discharging current may reduce the discharge capacity significantly or cause over-heat.

放电电流应小于产品规格书里提到的最大放电电流。高放电电流将极大降低放电容量或者使电芯发烫。

2. Discharge Temperature放电温度

The cell shall be discharged within the temperature range specified in the Product Specification.

电芯应当在产品规格书中指定的温度范围放电。

3. Over-Discharge过放电

It should be noted that cells would be at an over-discharged status due to self-discharge characteristics in case they were not used for a long time. In order to prevent over-discharging, cells shall be charged periodically to maintain the voltage between 3.7V and3.9V. Over-discharging may cause the loss of cell performance, characteristics, or battery functions.

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如果电芯长时间不用，由于自身放电特性，电芯将处于过放电状态,这是应注意的。为了避免过放电，电芯应周期性充电，使电压保持在3.7V到3.9V之间，过放电会导致电芯性能，特性或功能的降低。

Appendix -C Storage
附录-----C存储

If the Cell is stored for a long time, the cell's storage voltage should be 3.7~3.9V and the cell is to be stored in a condition as Item. 4.11.

电芯在4.11 的存放条件下长期存放后,电芯的存储电压应在3.7~3.9V。

Appendix -D Handling of Cells
附录----- D 电芯操作

1.Consideration of strength of film package包装膜注意事项

Easily damaged by sharp edge parts such as nail and needle, so don't strike by those sharp parts.

铝箔软包装比较容易被锐利部件刺破，如钉子、针，不要用这些锐利的部件刻划电池。

Sealed edge may be damaged by heat above 100°C, bend or fold sealed edge.

封边被加热到100°C 以上以及弯折封边都容易使封边受损。

2.Short短路

Don't bend the tabs.Short terminals of cells is strictly prohibited, it may damage cells, even result in safety accident.

禁止弯折极耳。禁止短路电芯，它会导致电芯严重损坏，甚至引发安全事故。

3.Mechanical Shock机械冲击

Don't Fall, shock, Crush, bend cell body.

禁止跌落，冲击，挤压，弯折电芯。

Appendix -E Others
附录-----E 其他

1. Prevention of short circuit within a battery pack

Enough insulation layers between wiring and the cells shall be used to maintain extra safety protection. The battery pack shall be structured with no short circuit within the battery pack, which may cause generation of smoke or firing.

在导线和电芯之间有足够多的绝缘材料将用于保持电芯较好的安全特性 包装盒内不要设计短路电路，短路会产生冒烟或起火。

2. Prohibition of disassembly禁止拆卸电芯

Never disassemble the cells The disassembling may generate internal short circuit in the cell, which may cause gassing, fining, explosion, or other problems.

不要拆卸电芯。拆卸电芯会导致电芯内部短路，产生有毒气体，澄清剂，爆炸和其他问题。

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Electrolyte is harmful 。 battery should not have liquid from electrolyte flowing, but in case the electrolyte come into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought 电解液是有毒的。电芯不能有流动的液体，但是如果电解液接触到皮肤，或者进入眼睛内，医生将立即用清水清洗电解液，遵医嘱检查。 3. Prohibition of dumping of cells into fire禁止把电芯放进火里 Never incinerate nor dispose the cells in fire. These may cause explosion of the cells, which is very dangerous and is prohibited. 不要烧毁电芯也不要投掷火中，这样将导致电芯爆炸，这些是非常危险和禁止的。 4. Prohibition of cells immersion into liquid禁止把电芯放在液体里 The cells shall never be soaked with liquids such as water, seawater, and drinks such as soft drinks, juices, coffee or others. 电芯不能被液体浸湿比如水、海水，和饮料如不含酒精的饮料、果汁、咖啡、或其他。 5. Cells replacement置换电芯 The battery replacement shall be done only by either cells supplier or device supplier and never be done by the user. 电芯置换仅仅由其他电芯厂商或设备厂商操作，不能由使用者置换。 6. Prohibition of using the damaged cells禁止使用损坏电芯 The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as damages in a plastic envelop of the cell, deformation of the cell package, smelling of an electrolyte, an electrolyte leakage and others, the cells shall never be used any more. The Cells with smell of the electrolyte or leakage shall be placed away from fire to avoid firing or exploding 电芯在运输其间由于振动而损坏，如果发现电芯有任何不正常现象，例如：电芯的塑料包装的损害，包装的变形，有电解液的气味，漏液和其他现象，电芯将不再使用。有电解液或漏液气味的电芯应远离火源避免发生火灾或爆炸。 7. Power consumption at standby status整机静态功耗 Products using LIB battery can charge from 0V but not preferred: Power consumption of products with LIB battery at standby status maybe cause battery discharged deeply. 本产品不支持0V充电，在设计配套产品时请考虑整机静态功耗，以免电芯造成过放。				

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Customer Inquiry
客户要求

Model: 21700T ZS50T
型号: 21700T ZS50T
Version: FALSE
版本: FALSE

1. IF clientele ratify specification and showpicce, please sign back specification to ZS in 1 week, or else blank out it.
如果客户认可规格书和样品, 请于7天内回签规格书给正胜公司, 过期视为作废。

2. The customer is requested to write down your information and contact ZS in advance, if and when the customer needs applications or operating conditions other than those described in this document. ZS could design and build such products according to your special request.
如果客户需要其他方面的说明或工作条件与规格书内容不一致 请客户提前和正胜公司联系。