— -- SHENZHEN KUNTENG CO., LTD — —

Specifications

Rechargeable Nickel-Metal Hydride Battery

1. APPLICATION

This specification applies to the Sealed Nickel-Metal hydride rechargeable cell or battery:

Model: TINKO-AA2200mAh 1.2V

Monomer battery type: AA

2、 DATA OF NICKEL-METAL HYDRIDE BATTERIES

All data involves voltage and weight to stack-up battery are equal to the value of unit cell ti mes the number of unit cell which consisted in the stack-up batteries

Example: Stack-up battery consisting one unit cells

Nominal voltage of unit cell=1.2V

3、 RATINGS

Description	Unit	Specification	Conditions
Nominal Voltage	V/Cell	1.20	Unit cell
Nominal Capacity	mAh	2200	Standard Charge/Discharge
Standard Charge	mA	220 (0.1C)	T_1= 0~45℃(see Note 1)
	Hour	16	
Quick Charge	mA	660 (0.3 C)	-△V=15-20mV/Cell or Temp.Cut off=55℃. T_1= 10~45℃
	Hour	4.5	
Trickle Charge	mA	44-110 (0.02C~0.05C)	T_1= 0~45℃
Internal Impedance	mΩ/Cell	≤30	Upon fully charge (at 20℃)
Discharge Cut-off Voltage	V/Cell	1.0(Standard)	
Storage Temperature	℃	-20~45	Discharged state、Humidity、Max.80%
Typical Weight	g	29	

4、PERFORMANCE

4.1 Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

Ambient Temperature Ta：20±5℃

Relative Humidity： 65±20%

4.2 Notes： Standard Charge/Discharge Conditions：

Charge： 220mA(0.1C)×16hours

Discharge： 440mA(0.2C) to 1.0V/Cell

4.3 Voltage meter: 0.5 level or higher as required in IEC51/IEC485. Internal impedance exceeds 10KΩ/V.

Current meter: 0.5 level or higher as required in IEC51/IEC485. Internal impedance should be less than 0.01Ω /V(including wires).

Internal impedance meter: Alternating current of 1000HZ, connector measuring equipment with sin wave of 4.

Test	Unit	Specification	Conditions	Remarks
Open Circuit Voltage (OCV)	V/ Cell	≥1.25	Within l hour after standard Charge	
Capacity	mAh	≥2200	Standard Charge Discharge	Up to 3 cycles are allowed
Internal Impedance	mΩ/ Cell	≤30	Upon fully charge (at 20℃)	
High Rate Discharge (0.5C)	minute	≥108	Standard Charge, l hour rest Before discharge by 0.5C to 1.0V/cell	Up to 3 cycles are allowed
Charge Retention	mAh	≥1320(60%)	Standard Charge, Storage：28 days, Standard Discharge	
Leakage		No leakage nor deformation	Fully charged at 460(0.2C) mA for 6.5hour stand for 14 days	
Vibration Resistance		Change of voltage should be under 0.02V/ Cell, Change of impedance should be under 5 mΩ/ Cell	Charge the cell 0.1C 16hrs,then leave for 24hrs,check Cell before/after vibration, Amplitude 1.5mm Vibration 3000 CPM Any direction for 60mins.	
Impact Resistance		Change of voltage should be under 0.02V/ Cell Change of impedance should be under 5mΩ/ Cell	Charge the cell 0.1C 16hrs Then leave for 24hrs,check bat-before/after dropped, Height 50cm Wooden board (thickness 30mm) Direction not specified, 3 times.	
Safety		Thebattery shall not explode,but leakage & deformation are acceptable	The Reverse-charge is conducted for 60 minutes at current of 1.0C after pre-discharge at 0.2C current to 0V	
IEC Cycle Life	Cycle	≥500	IEC standard	

5、 CONFIGURATION, DIMENSIONS AND MARKI

Please refer to the attached drawing.

6、EXTERNAL APPEARANCE

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage nor deformation.

7、WARRANTY

One year limited warranty against workmanship and material defects.

Suggested: This company product when leaving the plant is away from and the packing condition already sufficient 20-80％ electric quantities according to the transportation, your firm when examines the capacity, first uses 0.2C to discharge to 1.0V; Uses the stipulation electric current to put sufficiently again, carries on the capacity check. If the stock time has 2 months or above, discharges first with 0.2C to 1.0V, then charges 16hrs with 0.1C, puts aside 20min, by the 0.2C electric discharge to 1.0V, after activation; Uses gauge to decide the electric current again to put sufficiently, carries on the capacity check.

For the first time when use the suggestion uses the standard mise-a-la-masse method charge, in order to avoid causes the damage to the battery.

8、 CAUTION

A. Reverse charging is not acceptable.

B. Charge before use. The cells/batteries are delivered in an uncharged state.

C. Do not charge/discharge with more than our specified current.

D. Do not short circuit the cell/battery Permanent damage to the cell/battery may result.

E. Do not incinerate or mutilate the cell/battery.

F. Do not solder directly to the cell/battery.

G. the life expectancy may be reduced if the cell/battery is subjected adverse conditions like: Extreme temperature, deep cycling, excessive overcharge/ over-discharge.

H. store the cell/battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment.

I. As a result of the battery electrochemistry system's restriction, the battery in long-term storage's situation, suggests the battery belt 80%~100% electric quantities.

J. In order to maintain battery's performance, when the battery stores up the full 6 months, suggested that carries on the charge, the electric discharge the battery with the undercurrent to circulate for several weeks time, uses again or stores up.

Notes：

⑴ T_1: Ambient emperature.

⑵ Approximate charge time from discharged state, for reference only.

⑶ IEC standard

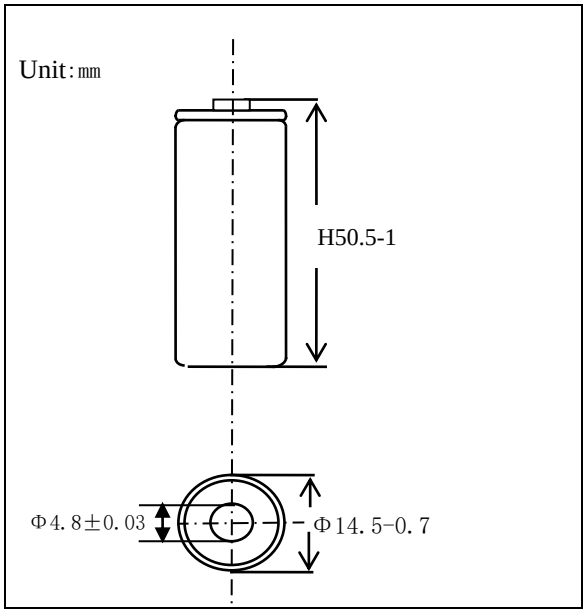
Cycle No.	Charge	Rest	Discharge
1	0.1C×16h	None	0.25C×2h20min
2-48	0.25C×3h10min	None	0.25×2h20min
49	0.25C×3h10min	None	0.25C to 1.0V/ cell
50	0.1C×16h	1-4h	0.2C to 1.0V/ cell
Cycles l to so shall be repeated until the discharge duration on any 50th Cycle becomes less than 3 h.			

Attaches the graph :

TINKO-AA2200 Monomer battery performance standards document

Specifications

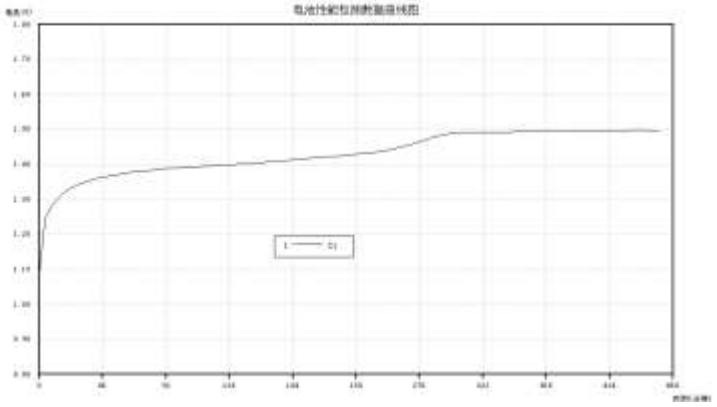
Model	Rechargeable Nickel-Metal Hydride Battery	
Name	**TINKO-AA2200**	
Nominal Voltage	1.2V	
APPLICATION	220-660 mA	
Capacity	discharge to0.2 C to 1.0 V(at20℃)	
	Nominal Capacity :2200mAh	
	Minimum Capacity：1760mAh	
Dimension	Diameter	14.5--0.7mm
	High	50.5-1m
Charging conditions	Charge at 0.1 Cfor 16hour (at20℃)	
Quick Charge	440 mA to660 mA (0.2C to 0.3C) -ΔV=15-20mV/Cell or Timer Cut Off=120 % nominal capacity or Temp.Cut off=55℃., T_1= 10~45℃	
Internal Impedance	Upon fully charge，MAX≤ 30mΩ	
IEC Cycle Life		≥500 次
Weight		29g
Temperature Range	Standard Charge	0℃ to 45℃
	Quick Charge	10℃ to 45℃
	discharge	-20℃ to 50℃
	Storage	-20℃ to 35℃



Charging and discharging characteristic

0.2C charge curve

Voltage (V)



0.2CDischarge curve

Voltage (V)