

A. Basic

Type		Sealed Rechargeable Ni-MH
Model		CYH-49AA2200
Size		AA
Nominal Voltage (V)		1.2
Nominal Capacity (mAh)		2200
Dimension	Diameter (mm)	14.5 ⁺⁰ _{-0.7}
	Height (mm)	49.5 ^{±0.5}
Standard Charging	Current (mA)	220
	Time (h)	16
Operation Temperature(°C)	Standard Charging	0~45
	Discharging	-20~65
	Storage	-20~35(RH≤85%)
Permanent Charging Current (mA)		66~110
Maximum Discharging Current (mA)(continuous)		4400
Charge Impedance (mΩ)		≤50 (1000Hz)
Discharge Cut-off Voltage (V)		1.00
Charge Retention (20°C)		≥60%
Weight Approx. (g)		32

B. Test Report

Tests are carried out within one month of delivery under the following condition:

1. Ambient Conditions :

Room Temperature 20±5 °C

Relative Humidity 65%±20%

2. Capacity Testing

2.1 Standard Charging

0.2C discharge to 1.00V/cell

0.1C charging for 16 hours

Rest for 1 hours

0.2C discharge to 1.00V/cell.

The capacity is no less than 2100mAh, the typical capacity is no less than 2150mAh,

Up to 3 cycles are allowed, one of them to meet the requirements for namely qualified.

3. Open Circuit Voltage (OCV)

After the battery is fully charged with 0.1C for 16h, within 1 hour, the OCV is greater than 1.25V/cell

4. Internal Impedance

After the battery is fully charged with 0.1C for 16h, within 1 hour, the impedance is not greater than 50 mΩ, as tested by 1000Hz AC source.

5. Charge Retention

The fully charged (with 0.1C for 16h) battery is held under temperature of 20±2°C for 28 days, the discharged capacity is no less than 1320mAh .

6. Overcharging

Under temperature of 20±5°C, After 0.2C to 1.00V, the battery is charged at 0.1C rate for 48 hours. No de-formation of the battery can be found. Standard capacity can be attained under normal discharging operation.

7. Cycle Life

7.1 Normal Cycling Test(I.E.C):

Cycle No.	Charge	Rest	Discharge
1	0.1C × 16hrs	None	0.25C × 2hrs 20mins
2~48	0.25C × 3hrs 10mins	None	0.25C × 2hrs 20mins
49	0.25C × 3hrs 10mins	None	0.25C to 1.00V/cell
50	0.1C × 16hrs	1~4hrs	0.2C to 1.00V/cell
Cycle 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3hrs			

After 500 cycles of charging/discharging, capacity 1320mAh (60%) can be maintained under the cycling test.

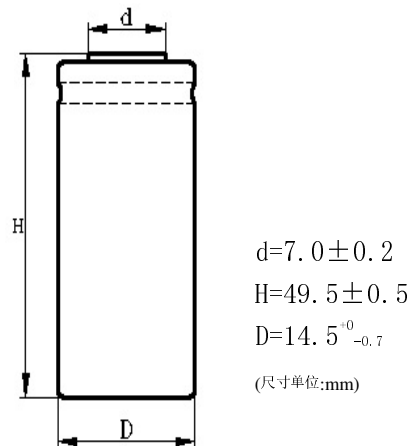


Figure of CYH-49AA2200 cell (with tube)

Note: All the above values subject to change without prior notice.



8. Cautions

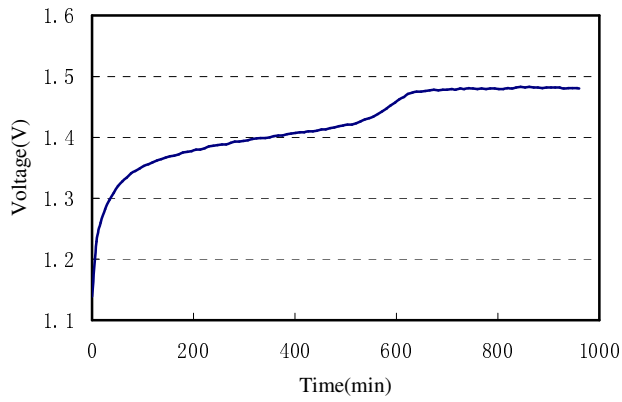
1. Reverse charging is not acceptable。
2. Charge before use, use the correct charger for Ni-MH batteries。
3. Do not charge / discharge with more than the specified current。
4. Do not short circuit the cell / battery。
5. Do not incinerate or mutilate the cell/battery。
6. Do not solder directly to the cell / battery。
7. The life expectancy may be reduced if the cell / battery is subjected to adverse conditions, like extreme temperature, deep cycling, excessive overcharge /over-discharge。
8. Store the cell / battery in a cool dry place。
9. When find battery power down during use, please switch off the device to avoid over discharge。
10. When not using a battery, disconnect it from the device。
11. well-ventilated place out of direct sunlight。
12. During long term storage, battery should be charged and discharged once every 3~6month。
13. When the battery is hot, please do not touch it and handle it, until it has cooled down。
14. Do not mix batteries with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon batteries。
15. Do not mix new batteries in use with semi-used batteries, battery may be over-discharged。
16. Never disassemble a battery, as the electrolyte inside is strong alkaline and can damage skin and clothes and eyes.
17. Keep away from children. If swallowed, contact a physician at once。

C. Abuse Test

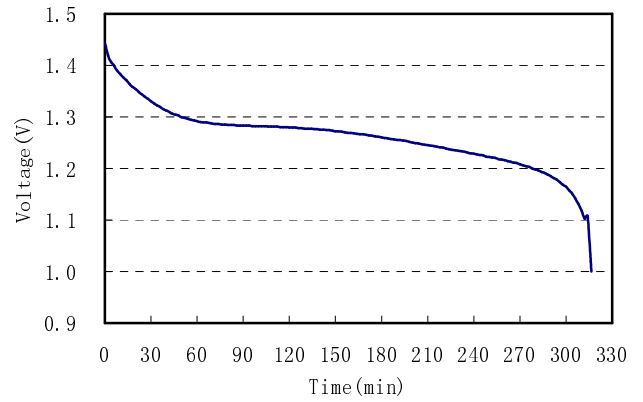
Items	Test conditions	Test results
Short circuit test	After 0.2C to 1.00V, cell is fully charged with 0.1C for 16hours(or with 0.5C for 2.2hours), then shorted for 1hour or longer with a 30~50mΩ load or less	No fire No explosion
Overcharge test	Cell is discharged with 0.2C to 1.00V, then 0.1C for 48 hours	No explosion Leakage may occur
Over discharge test	Cell is discharged with 0.2C to 0.00V, then with 1C forced discharged for 1hours	No explosion
Drop test	After 0.2C to 1.00V, cell is fully charged with 0.1C for 16hours, then cell is dropped 3 times from a 1.9m height onto solid wood (3mm thick) with random orientation	No abruption No leakage No explosion
Vibration test	Cell is vibrated continuously lengthwise for 60minutes Amplitude: 4mm Frequency: 1000times/minutes	No physical change No leakage Cell electrical performances unchanged
High temperature test	After 0.2C to 1.00V, cell is fully charged with 0.1C for 16hours(or with 0.5C for 2.2hours), cell is placed to the baking oven which its set-up temperature is 150±5℃	Cell don't explosion before 15 minutes
Penetration test (Hole drilling)	After 0.2C to 1.00V, cell is fully charged with 0.1C for 16hours or 0.5C for 2.2hours, cell is drilled diameter wise with a 3mm Φ drill at a depth of less than 1mm	No explosion
Water immersion test	a. Cell is immersed in water for one month b. Cell is immersed in salt water with a 5% concentration for one month	No explosion

Attention: The object of abuse test is unit cell.

Warning: please consult **Cyber-Power** before performing those destructive tests.



(Fig2 0.1C Charging curve)



(Fig3 0.2C discharging curve)

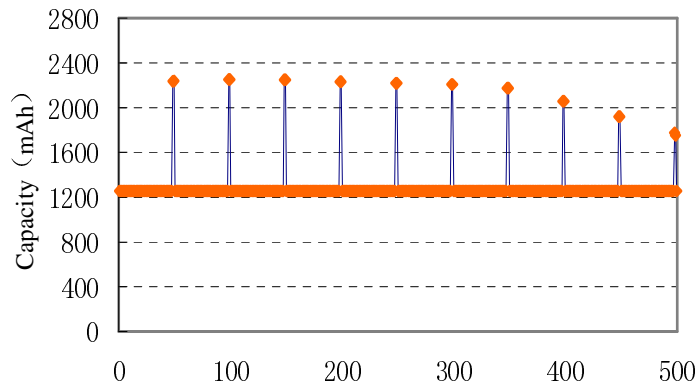


Fig4. Cycle life curve (Normal cycling test)