



Sealed Rechargeable Nickel Cadmium Battery

Ni-CD 2500mAh 'C'

1. SCOPE

The specifications governs the performance of the following Nickel-Cadmium Cylindrical cell and its battery pack..

Model: NCC2500

Cell Size: D (ϕ :25.2 \pm 0.3 mm H: 46.5 \pm 0.5 mm)

2. DATA OF BATTERY PACK

The data of battery pack, including voltage and weight, is almost equivalent to the multiple numbers of the relevant single cells.

Example: Battery pack consisting three single cells

Nominal voltage of single cell = 1.2V

Nominal voltage of battery pack = 1.2V \times 3 = 3.6V

3. RATINGS

Description		Unit	Specification	Conditions
Nominal Voltage		V/Cell	1.2	Single cell or battery pack
Nominal Capacity		mAh	2500	Standard Charge/Discharge
Standard Charge Rate		mA	250 (0.1C)	
		Hour	14~16	
Rapid Charge Rate		mA	1250 (0.5C)	Voltage Cut Off- Δ V=10-15mV Temp.Cut Off =50°C
		Hour	2.3approx (see Note 1)	
Trickle Current		mA	(0.05C)~(0.1C)	
Standard discharge		mA	500 (0.2C)	
Discharge Cut-off Voltage		V/Cell	1.0	Battery pack: (n \times 1.0)V (n=1~6) [(n-1) \times 1.2]V (n=7~10) (n: cell number)
Operating Temperature Range	Standard Charge	°C	0~+45	Humidity: +65% \pm 20%
	Rapid Charge	°C	10~+40	
	Discharge	°C	-20~+60	
Storage Temperature Range	Within 2 years	°C	-20~+35 (see Note 2)	Humidity: +65% \pm 20%
	Within 6 months	°C	-20~+40	
	Within 1 month	°C	-20~+50	
	Within 1 week	°C	-20~+55	
Dimension	Diameter	mm	25.2 \pm 0.3	
	Height	mm	46.5 \pm 0.5	
Typical Weight		Gram	60approx	Single cell



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4. PERFORMANCE

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

Ambient Temperature, T_1 : $20 \pm 5^\circ\text{C}$

Relative Humidity: $65 \pm 20\%$

Notes: Standard Charge/Discharge Conditions:

Charge: $250\text{mA}(0.1\text{C}) \times 15$ hours

Discharge: $500\text{mA}(0.2\text{C})$ to $1.0\text{V}/\text{Cell}$

Test Item	Unit	Specification	Test Conditions	Remarks
1. Capacity	mAh	≥ 2500	Standard Charge/Discharge	Up to 3 cycles are allowed
2. Open Circuit Voltage (O.C.V)	V/Cell	≥ 1.30	Within 1 hour after standard Charge	
3. Closed Circuit Voltage (C.C.V)	V/Cell	≥ 1.25	Within 1 hour after standard Charge, discharge the cell with 1C, The C.C.V. shall exceed 1.25V per cell within 1sec.	
4. Internal Impedance	$\text{m}\Omega/\text{Cell}$	≤ 15	Within 1 hour after standard Charge (1000Hz)	
5. High Rate Discharge (1C)	minute	≥ 54	Following Standard Charge, Stored for a period of 1hour, The Discharge duration by 2500mA (1C) to $1.0\text{V}/\text{cell}$	Up to 3 cycles are allowed
6. Low Temperature Discharge	hour	≥ 3	Standard Charge(0.1C): 14~16h ($20^\circ\text{C} \pm 5^\circ\text{C}$) Storage: 16~24h ($-18^\circ\text{C} \pm 2^\circ\text{C}$) Standard Discharge(0.2C): $1.0\text{V}/\text{cell}$ ($-18^\circ\text{C} \pm 2^\circ\text{C}$)	
7. Self Discharge	mAh	≥ 1750 (70%)	Following Standard Charge, Stored on open circuit for a period of 28days, The Discharge duration by 500mA (0.2C) to $1.0\text{V}/\text{cell}$	
8. Storage	hour	≥ 5	The cell shall be stored on open circuit for a period of 12months at discharged state, Following completion of the storage period; the cell shall be charge for 16hours at 250mA (0.1C). The discharge duration by 500mA (0.2C) to $1.0\text{V}/\text{cell}$	
9. Overcharge	hour	≥ 5 (No leakage and no explosion)	Charge: 250mA (0.1C) charge 28 days Storage: 1 hour Discharge: 500mA (0.2C) to $1.0\text{V}/\text{cell}$	



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10. Life Time (Based on IEC)	Cycle	≥500	IEC285 (1993) 4.4.1	(see Note 3)
11. Over-discharge		No distortion	Within 1hour after standard Charge, Discharge 24h with 1 Ω /cell load.	
12. Humidity		No leakage	The charged battery is stored for 10 days at 33±3°C and 80±5% of relative humidity.	
13. Safety Valve Operation		No explode or disrupt	Forced discharge is conducted for 1hour at a constant current of 1250mA (0.5C) after pre-discharge at a constant current of 500mA (0.2C) up to 0V.	(see note 4)
14. Drop Test		Mechanically and electrically normal	The battery is subjected to a drop, which has a height of 45cm (17.7 inches) to an oak board of 10mm or more thick in a voluntary axis respectively 3 times.	

5. CONFIGURATION, DIMENSIONS AND MARKINGS

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. CAUTION

- (1) Reverse charging is not acceptable.
- (2) Charge before use. The cells/batteries are delivered in an uncharged state.
- (3) Do not charge/discharge with more than our specified current.
- (4) Do not short circuit the cell/battery Permanent damage to the cell/battery may result.
- (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 adverse conditions like: extreme temperature, deep cycling, excessive overcharge/ over-discharge.
- (8) Store the cell/battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment.

8. Notes:

- (1) Approximate charge time from discharged state, for reference only.
- (2) We recommend cells or batteries are charged at least once every 6 months.
- (3) IEC285 (1993) 4.4.1 Cycle Life:

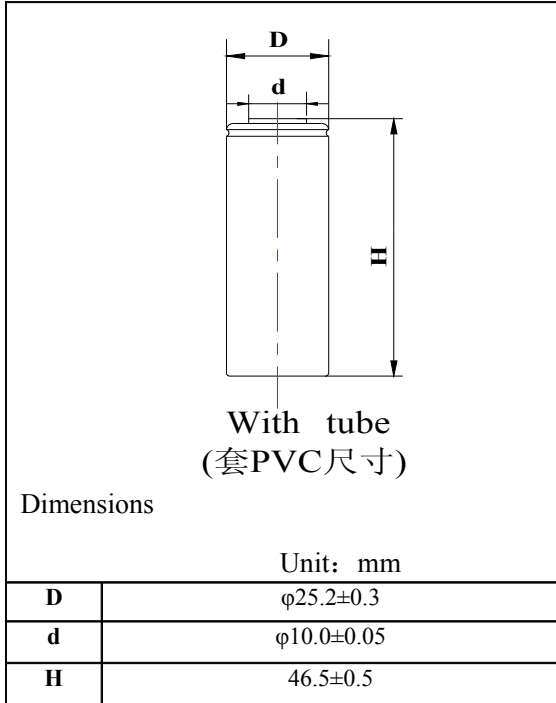
Cycle No.	Charge	Storage	Discharge
1	0.1C×16h	None	0.25C×2h20min
2-48	0.25C×3h10min	None	0.25C×2h20min
49	0.25C×3h10min	None	0.25C to 1.0V/cell
50	0.1C×16h	1-4h	0.2C to 1.0V/cell

Cycles 1 to so shall be repeated until the discharge duration on any 50th Cycle becomes less than 3h.

- (4) Electrolyte leakage and deformation of battery are acceptable.



Sealed Rechargeable Nickel Cadmium Battery Size C 2500mAh



Nominal voltage		1.2V		
Nominal Capacity (mAh)		C/10	C/5	1C
		2520	2500	2250
Weight		60g		
Internal Impedance at 1000Hz (After Charge)		$\leq 15m\Omega$		
Charge current	Standard	250mA		
	Rapid	1250mA		
Charge time	Standard	14~16Hrs		
	Rapid	2.3Hrs		
Ambient Temperature	Charge	Standard	0~+45°C	
		Rapid	10~+40°C	
	Discharge		-20~+60°C	
	Storage		-20~+35°C	

