



**SPECIFICATIONS**  
**Sealed Rechargeable Nickel Cadmium**  
**NI-CD 2/3AA 400mAh**

**1. SCOPE**

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

Model: NC23AA400

Cell Size: 2/3AA (φ:14.1<sup>±0.2</sup>mm H: 28.0<sup>±0.5</sup> 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×3 = 3.6V

**3. RATINGS**

Description		Unit	Specification	Conditions
Nominal Voltage		V/Cell	1.2	Single cell or battery pack
Nominal Capacity		mAh	400	Standard Charge/Discharge
Standard Charge Rate		mA	40 (0.1C)	
		Hour	14~16	
Rapid Charge Rate		mA	400 (1C)	Voltage Cut Off-ΔV=10-15mV Temp. Cut Off =50°C
		Hour	1.25approx (see Note 1)	
Trickle Current		mA	(0.05C)~(0.1C)	
Standard discharge		mA	80 (0.2C)	
Discharge Cut-off Voltage		V/Cell	1.0	Battery pack: (n×1.0)V (n=1~6) [(n-1)×1.2]V (n=7~10) (n: cell number)
Operating Temperature Range	Standard Charge	°C	0~+45	Humidity: +65%±20%
	Rapid Charge	°C	10~+40	
	Discharge	°C	-20~+60	
Storage Temperature Range	Within 2 years	°C	-20~+35 (see Note 2)	Humidity: +65%±20%
	Within 6 months	°C	-20~+40	
	Within 1 month	°C	-20~+50	
	Within 1 week	°C	-20~+55	
Dimension	Diameter	mm	14.1 <sup>±0.2</sup>	
	Height	mm	28.0 <sup>±0.5</sup>	



**SPECIFICATIONS**  
**Sealed Rechargeable Nickel Cadmium**  
**NI-CD 2/3AA 400mAh**

<b>Typical Weight</b>	Gram	7 approx	Single cell
-----------------------	------	----------	-------------

**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: 40mA (0.1C)  $\times$  15 hours

Discharge: 80mA (0.2C) to 1.0V/Cell

Test Item	Unit	Specification	Test Conditions	Remarks
<b>1. Capacity</b>	mAh	$\geq 400$	Standard Charge/Discharge	Up to 3 cycles are allowed
<b>2. Open Circuit Voltage (O.C.V)</b>	V/Cell	$\geq 1.30$	Within 1 hour after standard Charge	
<b>3. Closed Circuit Voltage (C.C.V)</b>	V/Cell	$\geq 1.25$	Within 1 hour after standard Charge, discharge the cell with 1C, The C.C.V. shall exceed 1.25V per cell within 1sec.	
<b>4. Internal Impedance</b>	m $\Omega$ /Cell	$\leq 40$	Within 1 hour after standard Charge (1000Hz)	.
<b>5. High Rate Discharge (1C)</b>	minute	$\geq 54$	Following Standard Charge, Stored for a period of 1hour, The Discharge duration by 400mA(1C) to 1.0V/cell	Up to 3 cycles are allowed
<b>6. Low Temperature Discharge</b>	hour	$\geq 3$	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): 1.0V/cell ( $-18^\circ\text{C} \pm 2^\circ\text{C}$ )	
<b>7. Self Discharge</b>	mAh	$\geq 300$ (75%)	Following Standard Charge , Stored on open circuit for a period of 28days, The Discharge duration by 80mA(0.2C) to 1.0V/cell	
<b>8. Storage</b>	hour	$\geq 5$	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 40mA(0.1C). The discharge duration by 80mA(0.2C) to 1.0V/cell	
<b>9. Overcharge</b>	hour	$\geq 5$ (No leakage and no	Charge: 40mA(0.1C) charge 28 days Storage: 1 hour Discharge: 80mA(0.2C) to 1.0V/cell	



**SPECIFICATIONS**  
**Sealed Rechargeable Nickel Cadmium**  
**NI-CD 2/3AA 400mAh**

		explosion)		
<b>10. Life Time (Based on IEC)</b>	Cycle	≥500	IEC285 (1993) 4.4.1	(see Note 3)
<b>11. Over-discharge</b>		No distortion	Within 1hour after standard Charge, Discharge 24h with 1 Ω /cell load.	
<b>12. Humidity</b>		No leakage	The charged battery is stored for 10 days at 33±3°C and 80±5% of relative humidity.	
<b>13. Safety Valve Operation</b>		No explode or disrupt	Forced discharge is conducted for 1hour at a constant current of 400mA(1C) after pre-discharge at a constant current of 80mA(0.2C) up to 0V.	(see note 4)
<b>14. Drop Test</b>		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



EVERGREEN (C.P.) USA INC.

TEL: (650) 952-8091 FAX: (650) 952-3629 E-MAIL: sales@evergreencpusa.com

**SPECIFICATIONS**  
**Sealed Rechargeable Nickel Cadmium**  
**NI-CD 2/3AA 400mAh**

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.