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 800mAh '1/2C'

1. SCOPE

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

Model: NC12C800

Cell Size: 1/2C (ϕ :$25.3^{\pm0.2}$mm H: $22.5^{\pm0.5}$ 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×3 = 3.6V

3. RATINGS

Description		Unit	Specification	Conditions
Nominal Voltage		V/Cell	1.2	Single cell or battery pack
Nominal Capacity		mAh	800	Standard Charge/Discharge
Standard Charge Rate		mA	80(0.1C)	
		Hour	14~16	
Rapid Charge Rate		mA	800(1C)	Voltage Cut Off- ΔV=10-15mV Temp.Cut Off = 50 ^{0}C
		Hour	1.25approx (see Note 1)	
Trickle Current		mA	(0.05C)~(0.1C)	
Standard discharge		mA	160(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	^{0}C	0~+45	Humidity: +65%±20%
	Rapid Charge	^{0}C	10~+40	
	Discharge	^{0}C	-20~+60	
Storage Temperature Range	Within 2 years	^{0}C	-20~+35 (see Note 2)	Humidity: +65%±20%
	Within 6 months	^{0}C	-20~+40	
	Within 1 month	^{0}C	-20~+50	
	Within 1 week	^{0}C	-20~+55	
Dimension	Diameter	mm	$25.3^{\pm0.2}$	
	Height	mm	$22.5^{\pm0.5}$	
Typical Weight		Gram	27approx	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: $20 \pm 5^{O}C$

Relative Humidity: $65 \pm 20\%$

Notes: Standard Charge/Discharge Conditions:

Charge: 80mA(0.1C) × 15 hours

Discharge: 160mA(0.2C) to 1.0V/Cell

Test Item	Unit	Specification	Test Conditions	Remarks
1. Capacity	mAh	⩾800	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	mΩ/Cell	⩽40	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 800mA(1C) to 1.0V/cell	Up to 3 cycles are allowed
6. Low Temperature Discharge	hour	⩾3	Standard Charge(0.1C): 14~16h ($20^{O}C \pm 5^{O}C$) Storage: 16~24h ($-18^{O}C \pm 2^{O}C$) Standard Discharge(0.2C): 1.0V/cell ($-18^{O}C \pm 2^{O}C$)	
7. Self Discharge	mAh	⩾600 (75%)	Following Standard Charge, Stored on open circuit for a period of 28days, The Discharge duration by 160mA(0.2C) to 1.0V/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 80mA(0.1C). The discharge duration by 160mA(0.2C) to 1.0V/cell	
9. Overcharge	hour	⩾5 (No leakage and no explosion)	Charge: 80mA(0.1C) charge 48h Storage: 1 hour Discharge: 160mA(0.2C) to 1.0V/cell	

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Test Item	Unit	Specification	Test Conditions	Remarks
10. Life Time (Based on IEC)	Cycle	⩾500	IEC61951-1(2003)7.4.1.1	(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 800mA(1C) after pre-discharge at a constant current of 160mA(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 deformatiom.

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.

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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) IEC61951-1(2003)7.4.1.1 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.

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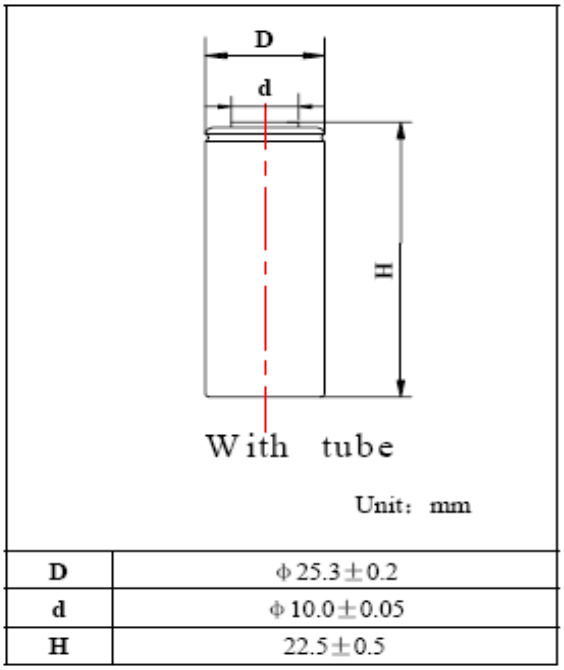

D	Φ25.3±0.2
d	Φ10.0±0.05
H	22.5±0.5

Nominal voltage			1.2V	
Nominal Capacity (mAh)			C/10	C/5	1C
			810	800	720
Weight			27g	
Internal Impedance at 1000Hz (After Charge)			≤40mΩ	
Charge current		Standard	80mA	
		Rapid	800mA	
Charge time		Standard	14~16Hrs	
		Rapid	1.25Hrs	
Ambient Temperature	Charge	Standard	0~+45°C	
		Rapid	10~+40°C	
	Discharge		-20~+60°C	
	Storage		-20~+35°C