



EVERGREEN (C.P.) USA INC.

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SPECIFICATIONS Sealed Rechargeable Nickel Metal Hydride Button Cell NI-MH 1/3AA 300mAh

1. SCOPE

The specifications governs the performance of the following Nickel Metal-Hydride Cylindrical cell and its battery pack.. (Refer to the attached figure 1)

Rated capacity: **300**mAh

Designation: **NH13AA300 (15/17) (1/3AA)** (D: $14.5^{+0}_{-1.0}$ mm H: $17.0^{+0}_{-1.0}$ mm)

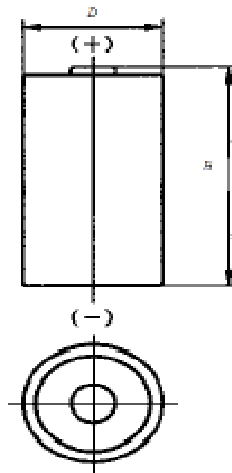


Figure 1- Jacketed cylindrical cells

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

Table 1 - Ratings of the cells

Description	Unit	Specification	Conditions
Nominal Voltage	V/Cell	1.2	Single cell
Nominal Capacity	mAh	300	Standard Charge/Discharge

4. PERFORMANCE

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

Ambient Temperature: $20 \pm 5^\circ C$

Relative Humidity: $65 \pm 20\%$

Standard Charge/Discharge Conditions:

Preparative: Prior to charging, the cell shall be discharged by **60**mA ($0.2I_A$) to 1.0V

Charge: **30**mA ($0.1I_A$) \times 16hours



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Stand in charged condition: 1~4h

Discharge: 60mA (0.2I_PA) to 1.0V/Cell

Table 2 – Performance and test methods^b

Test Item	Unit	Specification	Test Conditions	Remarks	
Discharge performance	20 °C ^a	h	≥5	Standard Charge/Discharge	/
		min	≥54	After Standard Charge, stored for 1~4h, then discharged by 300mA (1.0I _P A) to 0.9V.	/
	0 °C	h	≥4	After Standard Charge, stored for 16~24h in 0±2°C, then discharged by 60mA (0.2I _P A) to 1.0V in 0±2°C.	/
Charge (capacity) retention	h	≥3h	After Standard Charge, stored on open circuit for a period of 28days, then discharged by 60mA (0.2I _P A) to 1.0V.	/	
Endurance in cycles	cycle	≥500	Appendix table 3	/	
Permanent charge endurance	h	≥3	Appendix table 4	/	
Over charge	h	≥5	Charge: 30mA (0.1I _P A) for 48h; Storage: 1~4h Discharge: 60mA (0.2I _P A) to 1.0V	/	
Safety device operation	Not disrupt or burst		Undergo a forced discharge at constant current 60mA (0.2I _P A) to 0V. Then discharged by 300mA (1.0I _P A) for 60min.	/	
Storage ^b	hour	≥5	Stored on open circuit for 12 months. Then standard charge/discharge.)	/	
Internal resistance	mΩ	≤80	Within 1~4h after standard Charge (1000Hz)		
Weight	g	7.0 (approx)	/	Reference	
Vibration	No leakage, no fire, no explosion		IEC 62133 2002 4.2.2	/	
Free fall	No fire, no explosion		IEC 62133 2002 4.3.3	/	

a) Five cycles is permitted b) Unless otherwise stated, the cell shall be discharged by 60mA (0.2I_PA) to 1.0V before test.
 Notice: Test conditions is drawn according to IEC 61951-2 2003; Please refer to the related description of the standard.

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) Prevent short circuit, do not incinerate or disassemble the cell/battery.
- (5) Do not solder directly to the cell/battery for a long time.



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- (6) The life expectancy may be reduced if the cell/battery is subjected adverse conditions like: extreme temperature, deep cycling, and excessive overcharge/ over-discharge.
- (7) Store the cell/battery in a cool and dry place. Always discharge batteries before assemble or solder.
- (8) Always discharge batteries before bulk storage or shipment.
- (9) Do not mix batteries of different types and capacities.

Appendix

A) Endurance in cycles

Prior to the endurance on cycle test ,the cell shall be discharged at 30mA (0.2I_TA) to 1.0V. The following test shall be carried out in accordance with the conditions specified in Table 3.

Table 3 Endurance in cycles

Cycle number	Charge	Stand in charged condition	Discharge
1	0.1I _T A for 16h	none	0.25I _T A for 2h20min
2~48	0.25I _T A for 3h10min	none	0.25I _T A for 2h20min
49	0.25I _T A for 3h10min	none	0.25I _T A to 1.0V
50	0.1I _T A for 16h	1h~4h	0.20I _T A to 1.0V ^{a)}

a) Cycles 1 to 50 shall be repeated until the discharge duration on any 50th Cycle becomes less than 3h or the cell voltage drops below 1.0V during 1~48th cycle.

B) Permanent charge endurance

Prior to the endurance on cycle test ,the cell shall be discharged at 30mA (0.2I_TA) to 1.0V. The following test shall be carried out in accordance with the conditions specified in Table 7.

Table 4 Permanent charge endurance

Cycle number	Charge	Discharge ^{a)}
1	0.051I _T A for 91days	0.2I _T A to 1.0V
2	0.051I _T A for 91days	0.2I _T A to 1.0V
3	0.051I _T A for 91days	0.2I _T A to 1.0V
4	0.051I _T A for 91days	0.2I _T A to 1.0V

a) The discharge is carried out immediately upon completion of discharge.



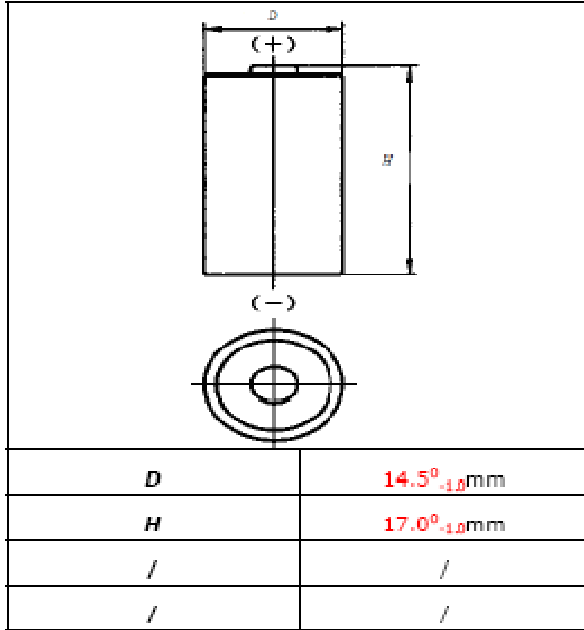
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Base Data:



Nominal voltage		1.2V	
Capacity comparison (mAh)		0.2I _A 1.0I _A	
		300 270	
Weight(g)		7.0	
Internal Impedance at 1000Hz (After Charge; mΩ)		≤80	
Charge current	Standard	30mA	
	Rapid	300mA	
Charge time	Standard	16h	
	Rapid	72min, plus 2h by 0.1I _A	
Temperature	Ambient	Charge	Standard 0~+45℃
		Rapid	+10~+45℃
	Discharge		-20~+60℃
	Storage		-20~+35℃

Electrical Performance:

