



ACH9019

SEALED NICKEL METAL HYDRIDE RECHARGEABLE CELLS & BATTERIES



1. SCOPE

This specification governs the performance of the following Enix Energies Nickel-Metal Hydride Cell and its stack-up batteries.

Cell size : 1,2V
IEC designation : HR6

The data involving nominal voltage and the approximate weight of stack-up batteries shall be equal to the value of the unit cell multiplied by the number of unit cells in the battery. For example, a stack-up battery consists of 1 unit cells:

Nominal Voltage of unit cell = 1.2V
Thus, nominal voltage of stack-up battery = 1.2Vx1 = 1,2V

2. RATINGS.

Type	Rechargeable Nickel Metal Hydride Cylindrical Cell
Nominal Voltage	1,2V
Nominal Capacity	2000 mAh
Minimum Capacity	1900 mAh when discharged at 0.2C to 1.0V at 20
Standard Charge	200 mAh (0,1C) for 16 hrs at 20 ⁰ C
Fast Charge	Charge termination control recommended : 950 mAh Control parameters: $-\Delta V = 0-5mV$ DT/dt** : 0.8 ⁰ C/min(0.5 to 0.9C) // 0.8-1/min
Trickle Charge	57 mAH (0.03C)~ 95 mAH (0.05C)
Service Life	>500 cycles (IEC standard)
Continuous Overcharge	190 mAh maximum current for 1 year
Internal Resistance	Average 50 mΩ upon fully charged at 1000HZ
Max. Charging Voltage	1,5V at 190 mAh charging
Discharge Cut-off Voltage	1V
Max. Discharging current	5700 mAh (3C)
Ambient Temperature Range	Standard Charging : 0 to 45 ⁰ C Fast Charging : 10 to 40 ⁰ C Discharging : -20 to 60 ⁰ C
Temperature range for storage:	Within 1 year : -20 to 35 ⁰ C
(Humidity: 65 ± 20 %)	Within 6 months : -20 to 35 ⁰ C

3. PERFORMANCE

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

Ambient Temperature, T_a : $20 \pm 5^\circ\text{C}$
 Relative Humidity : $65 \pm 20\%$

Standard Charge/Discharge Conditions:

Charge : 190 mAh (0.1C)×16hrs
 Discharge : 380 mAh (0.2C) to 1.0V/cell

Test	Unit	Specification	Conditions	Remarks
Capacity	mAh	≥1900	Standard Charge/Discharge	Up to 3 cycles are allowed
Open Circuit Voltage (OCV)	V	≥1,25	Within 1hr after standard Charge	Unit cell
Internal Impedance (Ri)	mΩ	≤50	Upon fully charge (1kHz)	Unit cell
Self - discharge	mAh	85 % capacity min.	Standard charged, stored for 6 months below 20°C, then standard discharge to 1,0V	
		80 % capacity min.	Standard charged, stored for 1 year below 20°C, then standard discharge to 1,0V	
Over-charge	N/A	No leakage or explosion	190 mAh (0.1C) charge for one year	
Over-discharge	N/A	After discharge, be conducted with constant load resistor 8 for 3 days.	80% original capacity	
Accelerated Cycle Life	Cycle	≥200	Charge : 400mA (0.2C) Discharge: 400mA(0.2C) To 1.0V/cell End-of-life: 80% nominal Capacity.	Cycling Charging Cutoff condition: -ΔV=5-10mV/cell or Timer Cutoff=105% Of input capacity
Vibration Resistance	N/A	<i>Change of voltage :</i> Should be under 0,02 V/ cell <i>Change of impedance :</i> Should be under 5 milli-ohm/cell.	Standard charge. Then leave for 24 hours, check cell before/after vibration. Amplitude:1.5mm Vibration:3000CPM	Unit cell

Test conditions :

Cycle No.	Charge	Rest	Discharge
1	0.1C×16hrs	none	0.25C×2hs20mins
2 - 48	0.25C×3hrs	none	0.25C×2hs20mins
49	0.25C×3hrs	none	0.25C to1.0V/cell
50	0.1C×16hrs	1-4hr(s)	0.2C to1.0V/cell

Cycles 1 to 50 shall be repeated

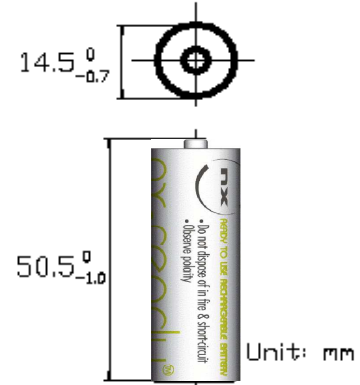
4. CONFIGURATION, WEIGHT, DIMENSIONS AND PACKING

Please refer to the attached drawing

Battery	
Dimension (mm)	50,5 x 14,5
Typical weight	27 g.

Blister	
Dimension (mm)	130 x 104
Typical weight	10g.
Typical weight (with batteries)	120g.

Packing	
1 blister = 4 batteries	
1 box = 12 blisters	
1 carton = 12 box	



5. EXTERNAL APPEARANCE

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage or deformation.

6. WARRANTY

One (1) year limited warranty against workmanship and material defects.

7. CAUTION

- Reverse charging is not acceptable.
- Charge before use. The cells/batteries are delivered in an uncharged state.
- Do not charge /discharge with more than the specified current.
- Do not short circuit the cell/battery. Permanent damage to the cell/battery may result.
- Do not incinerate or mutilate the cell/battery.
- Do not solder directly to the cell /battery.
- The life expectancy may be reduced if the cell/battery is subjected to adverse conditions like: extreme temperature, deep cycling, and excessive overcharge/ over discharge.
- Store the cell/batteries uncharged in a cool dry place.
- Keep away from children. If swallowed, contact a physician at once.
- Air ventilation should be provided in the plastic case of batteries, otherwise it may have a risk of generating gas inside them (oxygen gas, hydrogen gas) resulting explosion triggered by fire sources.

