

SPECIFICATION

Type: Ni-MH 9V Battery 250mAh

Date: 2005-9-21

Data Sheet

System -----	Sealed rechargeable
Ni-MH 9V Battery	
Cd content (% cell wt) -----	0 %
Type -----	9V250MAH
Specification -----	AAAA A ×7
Nominal voltage -----	8.4 V
Dimension (including shrink sleeve/label)	
Length , L -----	48.5mm (±0.5mm)
Width , W -----	26.5mm(±0.5mm)
Thickness , T -----	15.7mm (±0.5mm)
Weight approx. -----	43g (for reference only)
Capacity (20 °C, 0.2 C to 7.0V)	
Typical -----	260 mAh (for reference only)
Min.-----	250 mAh
Charging conditions (20 °C)	
Standard charge-----	25 mA 16 hrs
Fast charge* -----	up to 250 mA
(dT/dt=0.8~1 °C /min , -.V=0~5 mV/cell , TCO=45-50 °C , Timer=105%)	
Permanent charge -----	7.5 mA to 12.5 mA
Max. overcharge current-----	25 mA (up to 1 year)
Discharge conditions	
Discharge cut-off Voltage-----	7.0 V
Max. discharge current (continuous)-----	750 mA
Storage temperatures (relative humidity :65 ±20%)	
Storage(1 year) -----	-20 °C to +25 °C
Storage(6 month) -----	-20 °C to +35 °C
Storage(1 month)-----	-20 °C to +45 °C
Storage(1 week)-----	-20 °C to +55 °C
Operation temperatures (relative humidity : 65 ±20%)	
Discharge -----	-20 °C to +60 °C
Standard charge -----	0 °C to +45 °C
Fast charge -----	+10 °C to +40 °C
Permanent charge-----	0 °C to +45 °C

1.CHARACTERISTICS

Unless special stated, tests should be carried out within one month of delivery.

Ambient conditions:

Ambient Temperature: 20 ± 5 °C

Relative Humidity: $65 \pm 20\%$ RH

Notes:1) Standard charge/discharge

Charge: 25 mA(0.1It) × 16 hrs

Discharge: 50 mA(0.2It) to 7.0V

2) Except special explaining, the battery shall not leakage and PVC shall not breakage during the test.

Test Items	Test Conditions	Requirements	Remark
Capacity	Standard Charge and Discharge	Discharge Capacity: $\geq 250\text{mAh}$	Up to three cycles are allowed
Open-circuit Voltage (OCV)	Voltage between the battery terminals shall be measured within 1 hour after standard charge	$\geq 8.75\text{V}$	
High-rate discharge(1It)	After standard charge, rest for 1 hour before discharge to 7.0V at 250 mA current	≥ 50 mins	
IEC cycle life	IEC61951-2/2003 7.4.1.1(See Remark 1)	≥ 500 cycles	
Self- discharge	Standard charged ,stored for 28 days at standard ambient temperature or 7 days at 45 °C ,then standard discharge to 7.0V	Discharge Capacity: $\geq 60\%$ original capacity	
Over-charge	Charge at 25 mA (0.1 It) for 1 year.	No leakage, nor disrupt, nor burst.	
Over- discharge	(1) Standard charge and discharge for 3cycles , (2) Conducted with constant load resistor 168Ω for 3days (3) Then standard charge and discharge	Discharge Capacity: $\geq 80\%$ original capacity	Up to three cycles are allowed

Test Items	Test Conditions	Requirements	Remark
Vibration resistance	Standard charge. Then leave for 24 hours, check cell before/after vibration. Amplitude:1.5mm Vibration:3000CPM	Change of voltage $\Delta V < 0.02V / \text{cell}$ Change of internal impedance $\Delta R < 5 \text{ m}\Omega / \text{cell}$	Any direction for 30 minutes
Drop resistance	Charge the battery at $0.1I_t$ for 15hours. Then leave for 24 hours, check battery before/after dropped. Height: 100 cm Thickness of the wooden board : 30 mm	Change of voltage $\Delta V < 0.02V / \text{cell}$ Change of internal impedance $\Delta R < 5 \text{ m}\Omega / \text{cell}$ No breakage except impact point for PVC sleeves	Direction is not specified, Test for 3 times
Safety	The Reverse-charge is conducted for 60 minutes at current of $1.0I_t$ after pre-discharge at $0.2I_t$ current to 0V	The battery shall not explode, but leakage & deformation are acceptable	
Short Circuit	After standard charge short circuit for 1hr (leading wire= $0.75\text{mm}^2 \times 20\text{mm}$)	The battery shall not explode, but leakage & deformation are acceptable	
Welding Strength	90° direction	$\geq 2\text{kgf}$	

***REMARK :**

1.Cycle life:IEC61951-2(2003) 7.4.1.1

Cycles	Charge	rest	Discharge
1	$0.1I_t \times 16\text{hrs}$	0	$0.25 I_t \times 2\text{hrs } 20\text{mins}$
2~48	$0.25 I_t \times 3\text{hrs } 10\text{mins}$	0	$0.25 I_t \times 2\text{hrs } 20\text{mins}$
49	$0.25 I_t \times 3\text{hrs } 10\text{mins}$	0	$0.25 I_t$ to 1.0V/cell
50	$0.1 I_t \times 16\text{hrs}$	1~4hrs	$0.20 I_t$ to 1.0V/cell
Repeat 1 to 50 cycles, until the discharge time of any 50 th cycle is less than 3hrs			

2.COSMETIC

Batteries should be without any flaw 、 stain 、 discoloration or leakage and deformation.

3. CAUTION:

- 3.1 Do not dispose of cell into fire or dismantled under any condition.
- 3.2 Do not mix different cell types and capacities in the same battery assembly.
- 3.3 Charge and discharge under specified ambient temperature recommend to specification
- 3.4 Short circuit leading to cell venting must be avoided.
- 3.5 Never solder onto cell directly.
- 3.6 Cell reversal should be avoided.
- 3.7 Use batteries in extreme condition may affect the service life, such as: extreme temperature 、 deep cycle 、 extreme overcharge and over discharge.
- 3.8 Batteries should be stored in a cool, dry place
- 3.9 Once problems be found , stop using , send batteries to local agent.

4. STORAGE:

- 4.1 It is strongly recommended to stored Ni-MH batteries and cells in the temperature range from -20 °C to 35 °C, and in low humidity and no corrosive gas environment, to maintain a reasonably high capacity recovery level.
- 4.2 Avoid storage higher (e.g. 35 °C), lower temperature than -20 °C, or higher humidity which would result in deterioration or damage to the cells and batteries such as follows:
 - . Permanent capacity loss
 - . Electrolyte leakage resulted from the expansion or shrinkage of organic material inside the cells.
 - . Rust of metal parts.
- 4.3 Up to three full cycles of charge/discharge after long-term storage may need to obtain highest capacity.

5. REFERENCE:

Please refer to our responsible division in charge as below if any question on using batteries.