

SPECIFICATION

Type: Ni-MH 9V Battery 200mAh

Date: 2005-9-21

Data Sheet

System	-----Sealed rechargeable
Ni-MH 9V Battery	
Cd content (% cell wt)	----- 0 %
Type	-----9V200MAH
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.	-----40g (for reference only)
Capacity (20 °C, 0.2 C to 7.0V)	
Typical	-----210 mAh (for reference only)
Min.	-----200 mAh
Charging conditions (20 °C)	
Standard charge	-----20 mA 16 hrs
Fast charge*	-----up to 200 mA
(dT/dt=0.8~1 °C /min , -V=0~5 mV/cell , TCO=45-50 °C , Timer=105%)	
Permanent charge	----- 6 mA to 10 mA
Max. overcharge current	-----20 mA (up to 1 year)
Discharge conditions	
Discharge cut-off Voltage	-----7.0 V
Max. discharge current (continuous)	-----600 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: 20 mA(0.1It) × 16 hrs

Discharge: 40 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: $\geq 200\text{mAh}$	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 200 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 20 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 210Ω 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=0.75mm ² × 20mm)	The battery shall not explode, but leakage & deformation are acceptable	
Welding Strength	90 ° direction	≥2kgf	

***REMARK :**

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

Cycles	Charge	rest	Discharge
1	0.1I _t × 16hrs	0	0.25 I _t × 2hrs 20mins
2~48	0.25 I _t × 3hrs 10mins	0	0.25 I _t × 2hrs 20mins
49	0.25 I _t × 3hrs 10mins	0	0.25 I _t to 1.0V/cell
50	0.1 I _t × 16hrs	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.