Specification

High temperature NiCd Rechargeable AA Cell:
1.2V 900 mAh

AA Portable Power Corp

(http://www.batteryspace.com)
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Prepared & Approved by Louis (05/11/07)

1. APPLICATION

This specification is suitable for the following AA Portable Power Sealed Ni-Cd Cylindrical Cell and its stack-up batteries.

IEC Size: KR15/50

2. RATINGS

2.1 Nominal voltage: 1.2V

2.2 Nominal capacity: 900mAh at 0.2CmA

2.3 Typical weight: 21g

2.4 Standard charge: 90mA×15hours

2.5 Standard discharge: 180mA to 1.0V

2.6 Tickle charge: 27～56.25mA

2.7 Discharge cut-off voltage: 1.0V

2.8 Temperature range for operation: (Humidity: Max.85%)

Standard charge: 0～+70℃

Trickle charge: 0～+70℃

Discharge: -20～+70℃

2.9 Temperature range for storage: (Humidity: Max.85%)

Within 1 years: -20～+25℃

Within 6 months: -20～+30℃

Within a months: -20～+40℃

Within a week: -20～+50℃

3. APPEARANCE

There shall be no such defect as discoloration or electrolyte leakage or zero voltage

4. PERFORMANCE

4.1 TEST CONDITIONS

The test is carried out with new batteries.(within a month after delivery, the batteries should be discharged to 1.0V at 0.2C before any testing)

Ambient conditions:

Temperature: +20±5℃

Humidity: 65±20%

4.2 TEST METHOD & PERFORMANCE

Test item	Unit	Spec	Conditions	Remarks
Capacity	mAh	≥900	Standard charge/discharge	Up to 3 cycles are allowed
Open Circuit Voltage (OCV)	Volt	≥1.25	Rest for 1 hour after standard charge	1.25V/cell
Internal impedance(R)	mΩ	≤25	After fully charge (at 1000Hz)	Per Cell
High rate discharge	minute	≥110	Standard charge and discharge at 0.5CmA	End voltage is 1.0V/pks
Overcharge	mA	45(0.05C)	Continuous charge 28days/discharge to 1.0V at 0.2C	No leakage nor deformation/discharge time ≥255min
Charge retention	mAh	≥585(65%)	Standard charge; Storage: 28days Standard discharge	End voltage is 1.0V/pks
Cycle life	cycle	≥50	IEC61951-1 (2003)7.4.1.1	See note 1
Safety device operation	N/A	No disrupt nor burst	Forced discharge is conducted for 60minutes at 1C after pre-discharge at 0.2C to 0V	Leakage of electrolyte and deformation are acceptable
Short circuit	N/A	No disrupt nor burst	Fully charged and short circuit for 60minutes	Leakage and deformation are acceptable

Note 1: IEC61951-1(2003)7.4.1.1 cycle life

Cycle number	Charge	Rest	Discharge
1	0.1CmA for 16h	None	0.25CmA for 2h20min
2-48	0.25CmA for 3h10min	None	0.25CmA for 2h20min
49	0.25CmA for 3h10min	None	0.25CmA to 1.0V
50	0.1CmA for 16h	1-4hours	0.20CmA to 1.0V

4.3 Permanent charge endurance

Prior to this test, the cell shall be discharged at 0.2C at 20±5℃ to a final voltage of 1.0V and stored, in an ambient temperature of 40±2℃, for not less than 16h and not more than 24h.

IEC61951-1/7.4.2.3

Cycle number	Ambient temperature	Charge	Discharge A or B[a]	Minimum discharge duration
1	40±2℃	0.05C for 48h	A: 0.2C to 1.0V or B: 1.0C to 1.0V	No requirement No requirement
2		0.05C for 24h	A: 0.2C to 1.0V or B: 1.0C to 1.0V	3h 45min 42min
3		0.05C for 24h	A: 0.2C to 1.0V or B: 1.0C to 1.0V	3h 45min 42min
4	70±2℃	0.05C for 60days	A: 0.2C to 1.0V or B: 1.0C to 1.0V	No requirement
5		0.05C for 60days	A: 0.2C to 1.0V or B: 1.0C to 1.0V	
6		0.05C for 60days	A: 0.2C to 1.0V or B: 1.0C to 1.0V	
7	40±2℃	0.05C for 48h	A: 0.2C to 1.0V or B: 1.0C to 1.0V	No requirement No requirement
8		0.05C for 24h	A: 0.2C to 1.0V or B: 1.0C to 1.0V	2h 30min 24min
9		0.05C for 24h	A: 0.2C to 1.0V or B: 1.0C to 1.0V	2h 30min 24min

[a] A: for LT, MT or HT cells
B: for MT or HT cells only.

4.4 Charge acceptance at ＋55℃

Prior to this test, the cell shall be discharged at 0.2C at 20±5℃ to a final voltage of 1.0V and stored, in an ambient temperature of 55±2℃, for not less than 16h and not more than 24h.

Cycle number	Ambient temperature	Charge	Discharge [a]	Minimum discharge duration
1	55±2℃	0.0625C for 48h	0.25C to 1.0V	No requirement
2		0.0625C for 24h	0.25C to 1.0V	180 min
3		0.0625C for 24h	0.25C to 1.0V	180 min
4		0.0625C for 48h		No requirement
5	70±2℃	Stored for 28days		
6	55±2℃	Stored for 16-24hours and discharge to 1.0V at 0.25C		
7	55±2℃	0.0625C for 48h	0.25C to 1.0V	No requirement
8		0.0625C for 24h	0.25C to 1.0V	145 min
9		0.0625C for 24h	0.25C to 1.0V	145 min
Note: Battery should be no deformation, leakage and short circuit during all testing period				

4.5 Vibration

Cells shall be mechanically and electrically normal after vibration which has an amplitude of 4mm (0.1575inches) a frequency of 1000 cycles per minute (16.7Hz), which should be continued in three directions (X, Y, Z) for 60 minutes.

4.6 Incorrect polarity charging

Cells shall not explode after 1 hours of incorrect polarity charging at 1CmA.

5. PRECAUTION

5.1 We recommend you to set the cut-off voltage at 1.0V/cell.

5.2 Do not subject batteries to adverse condition such as extreme temperature, deep cycling and excessive over charge/over discharged.

5.3 Do not detect –ΔV for first 5 minutes of charging.

5.4 The cells shall be delivered in discharged condition, before testing or using, the

cells shall be correctly charged in accordance with this specification.

5.5 Avoid direct soldering onto cells.

5.6 Observe correct polarity when connecting.

5.7 Do not charge with more than our specified current.

5.8 Use only within the specified working temperature range.

5.9 Never put a battery into water or seawater

5.10 Avoid throwing cells into a fire or attempting to disassemble them. As the electrolyte inside is strong alkaline and can damage skin and clothes.

5.11 Avoid short-circuiting. It may be leakage.

5.12 Keep away from children, if swallowed, contact a physician at once.

5.13 Do not mix http://www.batteryspace.com batteries with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon.

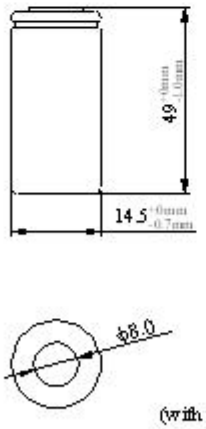
6. DATA SHEET

DATA SHEET

Specification

Nominal Voltage		1.2V	
Capacity (mAh)	Rate	0.2C	0.5C
	Nominal	900	850
	Typical	950	900
Approx Weight		21g	
Internal Resistence(at 1KHz)		≤25mΩ	
Charge	Standard	0.1C ×15hrs	
	Trickle	0.03C ~0.0625C	
Discharge cut-off voltage		1.0V	
Cycle life		≥50	
Operation temp.	Standard charge	0℃~70℃	
	Trickle charge	0℃~70℃	
	Discharge	-20℃~70℃	
Storage temp.	Within 6 month	-20℃~30℃	
	Within a month	-20℃~40℃	
	Within a week	-20℃~50℃	
Relative humidity		65±20%	

Dimension

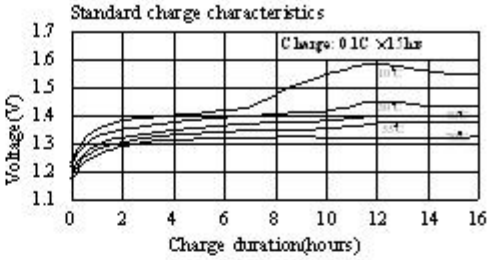


NOTE:

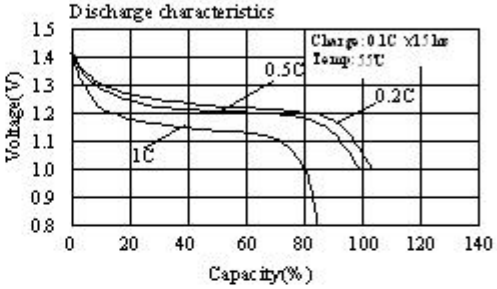
1. Nominal capacity rated at 0.2C
2. Other capacity are for reference
3. Weight and internal resistance are for reference

Typical characteristics

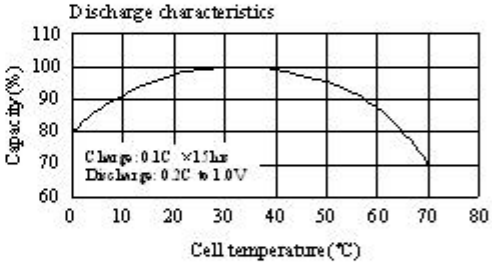
Standard charge characteristics



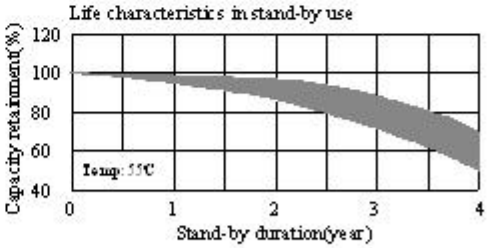
Discharge characteristics



Discharge characteristics



Life characteristics in stand-by use



Life characteristics in use