Specification

High temperature NiCd Rechargeable SC Cell:
1.2V 2000 mAh

AA Portable Power Corp

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

1. SCOPE

This specification is suitable for the following sealed Nickel Cadmium cylindrical rechargeable single cell and batteries produced by AA Portable Power Corp.

2. Model

Part Number: **HCD-SC2000B**

IEC Size: KR23/43

3. RATINGS

3.1 Nominal voltage: 1.2V

3.2 Nominal capacity: 2000mAh at 0.2CmA

3.3 Typical weight: 50g

3.4 Standard charge: 200mA×15hours

3.5 Standard discharge: 400mA to 1.0V

4.8 Tickle charge: 60～125mA

3.7 Discharge cut-off voltage: 1.0V

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

Standard charge: 0～+70℃

Trickle charge: 0～+70℃

Discharge: -20～+70℃

3.9 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℃

4. APPEARANCE

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

5. PERFORMANCE

5.1 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%

5.2 TEST METHOD & PERFORMANCE

Test item	Unit	Spec	Conditions	Remarks
Capacity	mAh	≥2000	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	≤15	After fully charge (at 1000Hz)	Per Pack
High rate discharge	minute	≥110	Standard charge and discharge at 0.5CmA	End voltage is 1.0V/pks
Overcharge	mA	200(0.1C)	Continuous charge 28days at 0.1C and stored for 30minutes, discharge to 1.0V at 0.2C	No leakage nor deformation/discharge time ≥300min
Charge retention	mAh	≥1300(65%)	Standard charge; Storage: 28days Standard discharge	End voltage is 1.0V/pks
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

5.3 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.				

5.4 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.

ICEL 1001 EN60598-2-22

Cycle Number	Ambient Temperature	Charge	Discharge [a]	Minimum discharge Duration
1	55±2℃	1/16C for 48h	0.25C to 1.0V	No requirement
2		1/16C for 24h	0.25C to 1.0V	180 min
3		1/16C for 24h	0.25C to 1.0V	180 min
4	70±2℃	Continuous charge 1/16C for 28 days		
5	70±2℃	discharge to 1.0V at 0.25C, no minimum duration required		
6	55±2℃	1/16C for 48h	0.25C to 1.0V	No requirement
7		1/16C for 24h	0.25C to 1.0V	180 min
8		1/16C for 24h	0.25C to 1.0V	180 min
Note: Battery should be no deformation, leakage and short circuit during all testing period				

5.5 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.

5.6 Incorrect polarity charging

Cells shall not explode after 1 hours of incorrect polarity charging at 0.5CmA.

6. PRECAUTION

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

6.2 Do not subject batteries to adverse condition such as extreme temperature, deep cycling and

6.3 Do not detect – Δ V for first 5 minutes of charging.

6.4 The cells shall be delivered in charged condition, before testing or using, the cells shall be correctly charged or discharge in accordance with this specification.

6.5 Avoid direct soldering onto cells.

6.6 Observe correct polarity when connecting.

6.7 Do not charge with more than our specified current.

6.8 Use only within the specified working temperature range.

6.9 Never put a battery into water or seawater

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

6.11 Avoid short-circuiting. It may be leakage.

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

6.13 Do not mix Batteryspace.com batteries with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon.

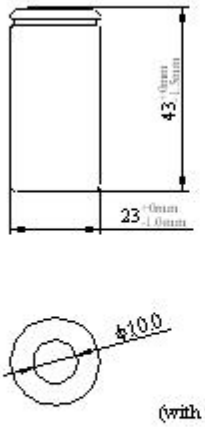
7. DATA SHEET

DATA SHEET

Specification

Nominal Voltage		1.2V	
Capacity (mAh)	Rate	0.2C	0.5C
	Nominal	2000	1850
	Typical	2050	2000
Approx Weight		50g	
Internal Resistence(at 1KHz)		≤15mΩ	
Charge	Standard	0.1C ×15hrs	
	Trickle	0.03C ~0.0625C	
Discharge cut-off voltage		1.0V	
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



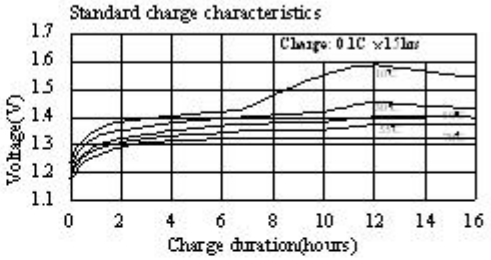
(with tube)

NOTE:

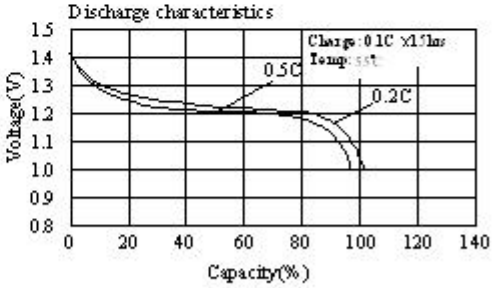
1. Nominal capacity rated at 0.2C
2. Other capacity are for reference
3. Weight and internal resistance are for reference

Typical characteristics

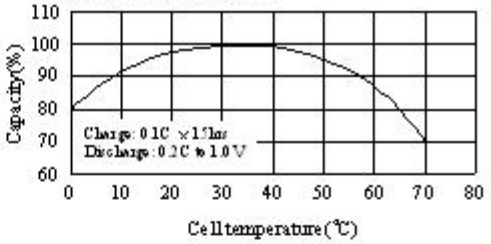
Standard charge characteristics



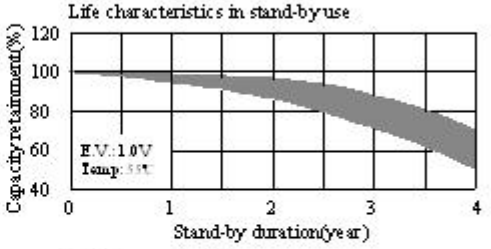
Discharge characteristics



Discharge characteristics



Life characteristics in stand-by use



Life characteristics in use