



比亚迪股份有限公司
BYD COMPANY LIMITED

SEALED NICKEL CADMIUM
RECHARGEABLE CELLS & BATTERIES
APPROVAL SHEET

TO : _____

BYD MODEL NO : D-AA1000B

CUSTOMER APPROVED P/N : _____

DATE OF SUBMISSION : 08-Oct-11

ATTACHMENT : SPECIFICATION

TOTAL NO. OF PAGES : 5

SPECIFICATION NO : S-DAA1000B01

VERSION NO : 1.0

| Drawn | CUI-MIAO | |
|-----------------|--------------------------------|----------------------|
| Approved | Customer Dept. I | <i>GUOQING-LI</i> |
| | Technology Dept. I | <i>ZHENGYI-HUANG</i> |
| | Quality Control Dept. I | <i>SHIHONG-SHAO</i> |

(with company chop)

Please sign and return one copy to us

BYD COMPANY LIMITED

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1. APPLICATION

This specification applies to the Ni -Cd batteries.

Model : D-AA1000B

2. CELL AND TYPE

2.1 Cell : Sealed Ni —Cd Cylindrical Cell.

2.2 Type : D-AA1000B

2.3 Size type: AA

2.4 IEC type: /

3. RATINGS

3.1 Nominal voltage : 1.2 V

3.2 Nominal capacity : 1000 mAh/0.2CmA (Note 1)

3.3 Typical weight : 21 g (unit cell)*
 “*”:Battery weight is only for reference.

3.4 Standard charge : 100 mA×15hours

3.5 Rapid charge : 1000mA×1.2hours(Max.)
 (with-DV, Time, Temperature control system)

Trickle current : 30~50 mA

3.6 Discharge cut-off voltage 1 V(0.2CmA)

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

Standard charge 0 ~ +45°C

Rapid charge +10 ~ +40°C

Trickle charge 0 ~ +45°C

Discharge -20 ~ +65°C

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

Within 2 years (Note 2) -20 ~ +30°C

Within 6 months -20 ~ +40°C

Within a months -20 ~ +50°C

Within a week -20 ~ +60°C

Note 1: Rated capacity figures are based on single cell performance.

Note 2: We recommend cells or batteries are charged and discharged at least once every 6 months.

4. ASSEMBLY & DIMENSIONS

Per attached drawing.

5. PERFORMANCE**5.1 TEST CONDITIONS**

The test is carried out with new batteries.

(within a month after delivery)

ambient conditions

Temperature : +20±5°C Humidity : 65±20%

Standard charge : 100mA(0.1C)×15hrs

Standard discharge : 0.2C to 1.0V

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5.2 TEST METHOD & PERFORMANCE

| Test | Unit | Specification | Conditions | Remarks |
|---------------------------|-------------|----------------------------|---|----------------------------|
| Capacity | mAh | ≥1000 | Standard charge/discharge | up to 3 cycles are allowed |
| Open Circuit Voltage(OCV) | Voltage (V) | ≥1.25 | After 1 hour standard charge | |
| Internal impedance | mΩ/cell | ≤30 | Upon fully charge (1KHz) | |
| High rate discharge(1C) | minute | ≥54(900mAh) | Standard charge before discharge | End Voltage is 1.0V/Cell |
| Overcharge | | no leakage nor explosion | 100 mA(0.1C) charge for 28 days | |
| Charge Retention | mAh | ≥700 | standard charge; storage: 28 days Standard discharge | |
| Cycle Life | cycle | ≥500 | IEC61951-1 | see note 3 |
| Leakage | | no leakage nor deformation | Fully charge at 1000 mA(1C), then storage 14 days | |

Note 3 IEC61951-1 cycle life

| Cycle number | Charge | Rest | Discharge |
|--------------|-------------------|------|----------------------|
| 1 | 0.1CmA for 16h | none | 0.25CmA for 2.33h |
| 2~48 | 0.25CmA for 3.17h | none | 0.25CmA for 2.33h |
| 49 | 0.25CmA for 3.17h | none | 0.25CmA to 1.0V/cell |
| 50 | 0.1CmA for 16h | 1~4h | 0.20CmA to 1.0V/cell |

50-cycle test as per above table is repeated . The discharge time of the 100th, 200th, 300th, 400th, 500th should be more than 3 hours respectively. (Ambient temperature is 20±5)°C

5.3 Humidity

The cells shall not leak during the 14 days when it is submitted to the condition of a temperature of 33±3°C and a relative humidity of 80±5% (salting is allowed).

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5.4 Vibration

Cells shall be mechanically and electrically normal after vibration which has an amplitude of 4mm(0.1575 inches) a frequency of 1000 cycles per minute, which should be continued in any directions during 60 minutes

5.5 Shock

Cells shall be mechanically and electrically normal after being subjected to a drop from a height of 450mm (17.716inches) onto an oak board in a voluntary axis respectively 3 times.

5.6 Short

Cells shall not explode after 1 hour short-circuit test.

5.7 Incorrect polarity charging

Cells shall not explode after 5 hour of incorrect polarity charging at 1 CmA.

6. PRECAUTION

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

6.2 If it is below 1.0V/cell, cells may have over-discharged or reverse charged.

6.3 Do not detect $-\Delta V$ for first 5 minutes of charging.

6.4 The cells shall be delivered in discharged condition, Before testing or using, the cells shall be correctly charged in accordance with this specifications.

7. WARNING

7.1 Avoid direct soldering onto cells.

7.2 Observe correct polarity when connecting.

7.3 Do not charge with more than our specified current.

7.4 Use only within the specified working temperature range.

7.5 Do not subject cells or batteries to mechanical shock.

7.6 Do not mix cells of different manufacture, capacity, size or type within a battery.

7.7 Seek medical advice immediately if a cell or battery has been swallowed.

7.8 When disposing of secondary cells or batteries, keep cells or batteries of different electro-chemical systems separate from each other.

7.9 Do not maintain secondary cells and batteries on charge when not in use.

8.0 After extended periods of storage, it may be necessary to charge and discharge the cells or batteries several times to obtain maximum performance

8.1 In the event of a cell leaking, do not allow the liquid to come into contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice

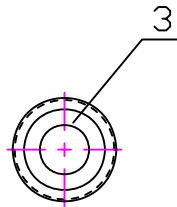
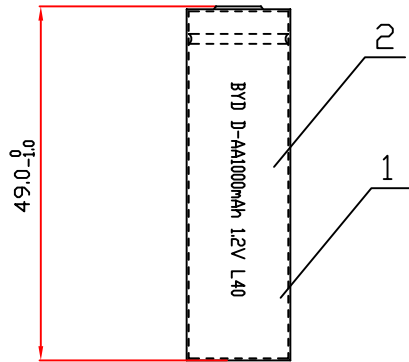
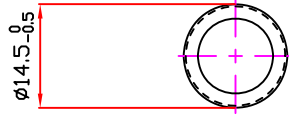
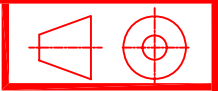
8. DANGER!

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

8.2 Avoid short circuiting. It may be leakage.

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DATE CODE:
 L 40
 Year(2011) Week(40)

| NO. | NAME | SIZE | QTY | NOTE | SAP NO |
|-----|--------|-------|-----|-------|--------|
| 3 | WASHER | AA | 1 | WHITE | 416309 |
| 2 | PVC | 23X54 | 1 | 116C | 400551 |
| 1 | CELL | AA | 1 | NI-CD | |



比亚迪股份有限公司
 BYD COMPANY LIMITED

| | | | |
|----------|--------------|------|------------|
| DRAWN | CUI-MIAO | DATE | 2011/10/08 |
| CHECKD | GUOQING-LI | DATE | 2011/10/08 |
| APPROVED | JIANGUD-TANG | DATE | 2011/10/08 |
| SCALE | / | UNIT | MM |