

SEALED METAL HYDRIDE

RECHARGEABLE CELLS & BATTERIES APPROVAL SHEET

TO :
BYD MODEL NO : H-AA1600BS
CUSTOMER APPROVED P/N :
DATE OF SUBMISSION: 14-Jul-11
ATTACHMENT: SPECIFICATION
TOTAL NO. OF PAGES : 5
SPECIFICATION NO: S-HAA1600BS01
VERSION NO: 1.0

Drawn	CUI-MIAO						
Approved	Customer Dept. I	GUOQING-LI					
	Technology Dept. I	ZHENGYI-HUANG					
	Quality Control Dept. I	SHIHONG-SHAO					

(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-MH batteries.

Model: H-AA1600BS

2. CELL AND TYPE

2.1 Cell : Sealed Ni-MH Cylindrical Cell.

2.2 Type : <u>H-AA1600BS</u>

2.3 Size type: AA

2.4 IEC type: /

3. RATINGS

3..1 Nominal voltage : 1.2 V

3.2 Nominal capacity : 1600 mAh/0.2CmA (Note 1)

3.3 Weight(About) : 29 g (unit cell)
3.4 Standard charge : 160 mA×15hours

3.5 Rapid charge : 1600mA×1.2hours(Max.)

(with-ΔV, Time, Temperature control system)

Trickle current : 48~80 mA 3.6 Discharge cut-off voltage 1 V(0.2CmA)

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

Standard charge $0\sim +45\,^{\circ}{\rm C}$ Rapid charge $+10\sim +40\,^{\circ}{\rm C}$ Trickle charge $0\sim +45\,^{\circ}{\rm C}$

Discharge $-5 \sim + 65^{\circ}$ C

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

Within 1 years (Note 2) $-2.0 \sim +25 ^{\circ}$ C

Within 6 months -2.0 ∼ +35 °C Within a months -2.0 ∼ +45 °C -2.0 ∼ +55 °C

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

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 : $+20\pm5^{\circ}$ C Humidity : $65\pm20\%$

Standard charge: 160mA(0.1C)×15hrs

Standard discharge: 0.2C to 1.0V

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5.2 TEST METHOD & PERFORMANCE

Item	specification	Conditions and remarks			
Typical Capacity	1600mAh	charge at 0.1C for 16 hours, rest for 1-4 hours, discharge at 0.2C till 1.0v, up to 3 cycles are allowed			
Minimum Capacity	1500mAh	charge at 0.1C for 16 hours, rest for 1-4 hours, discharge at 0.2C till 1.0v, up to 3 cycles are allowed			
Open Circuit Voltage(OCV)	≥1.25V	After 1 hour standard charge			
Internal impedance	≤40mΩ	Upon fully charge (1KHz)			
C rate Capacity	≥ 48 Minutes	charge at 0.1C for 16 hours, rest for 1-4 hours, discharge at 1C till 1.0v			
Overcharge	no leakage nor explosion	160 mA(0.1C) charge for 28 days			
Charge Retention (20°C) 80% of Minimum Capacity		charge at 0.1C for 16 hours <u>(100% state of charge),</u> store with open circuit for 6 months at 20°C, discharge at 0.2C till 1.0v,			
Leakage	no leakage nor deformation	Fully charge at 1600 mA(1C), then store for 14 days			

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).

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.

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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 charing 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 -△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 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.

8. DANGER!

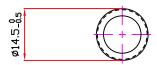
- 8.1 Avoid throwing cells into a fire or attempting to disassemble them. As the electrolyte inside is strong alkaline and can damage skin and clothes.
- 8.2 Avoid short circuiting. It may be leakage.
- 8.3 Not to be used in sealed conditions for Ni-MH cells.

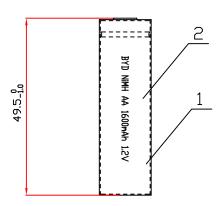
9. HSF (Hazardous Substance Free)

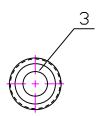
9.1 The product can meet the HSF requirement.

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<u> </u>						DRAWN	CUI-MIAO	DATE	2011/07/14
3	WASHER	AA	1	WHITE	416309	CHECKD	GUOQING-LI	DATE	2011/07/14
2	PVC	23X54	1	GREEN U	433885	APPROVED	JIANGUD-TANG	DATE	2011/07/14
1	CELL	AA	1	NI-MH		SCALE		UNIT MN	ММ
N□.	NAME	SIZE	QTY	NOTE	SAP NO	SCALE		ONTI	الاالدا