

SEALED NICKEL CADMIUM

RECHARGEABLE CELLS & BATTERIES APPROVAL SHEET

1.0

TO :	
BYD MODEL NO:	D-D4500A
CUSTOMER APPROVED P/N :	
DATE OF SUBMISSION:	08-Oct-11
ATTACHMENT :	SPECIFICATION
TOTAL NO. OF PAGES:	5
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VERSION NO:

Drawn	CUI-MIAO			
	Customer Dept.	GUOQING-LI		
Approved	Technology Dept.	ZHENGYI-HUANG		
	Quality Control Dept.	DONGXU-CHEN		

(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-D4500A

2. CELL AND TYPE

2.1 Cell : Sealed Ni - Cd Cylindrical Cell.

2.2 Type : D-D4500A

2.3 Size type: D

2.4 IEC type:

3. RATINGS

3.1 Nominal voltage : 1.2 V

3.2 Nominal capacity : 4500 mAh/0.2CmA (Note 1)

3.3 Typical weight : 130 g (unit cell)*

"*":Battery weight is only for reference.

3.4 Standard charge : 450 mA×15hours

3.5 Rapid charge : 4500mA×1.2hours(Max.)

(with-ΔV, Time, Temperature control system)

Trickle current : $135 \sim 225$ mA

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

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

Standard charge 0 ~ +45

Rapid charge $+10 \sim +40$

Trickle charge $0 \sim +45$

Discharge - 20 ~ + 65

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

Within 2 years (Note 2) - 20 ~ +30

Within 6 months - 2 0 ~ +40

Within a months $-20 \sim +50$

Within a week $-20 \sim +60$

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 Humidity: 65±20%

Standard charge: 450mA(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	≥4500	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	≤10	Upon fully charge (1KHz)		
High rate discharge(1C)	minute	≥54(4050mAh)	Standard charge before discharge	End Voltage is 1.0V/Cell	
Overcharge		no leakage nor explosion	450 mA(0.1C) charge for 28 days		
Charge Retention mAh		≥3150	standard charge; storage: 28 days Standard discharge		
Cycle Life	cycle	500	IEC61951-1	see note 3	
Leakage nor deformation		Fully charge at 4500 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	49 0.25CmA for 3.17h		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)

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

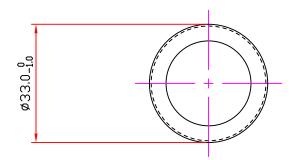
8. DANGER!

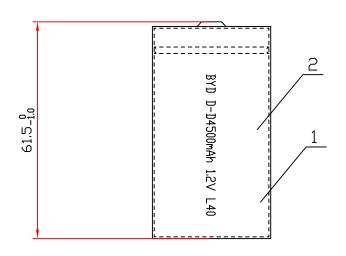
- 8.1 Avoid throwing cells into a fire or attempting to disassemble them. As the electrolyte inside is strong alkaline and can damage skin and clothes.
- 8.2 Avoid short circuiting. It may be leakage.

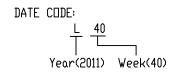
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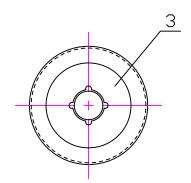
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						DRAWN	CUI-MIAD	DATE	2011/10/08	
3	WASHER	n	1	WHITE	413877	CHECKD	GUOQING-LI	DATE	2011/10/08	
		И		MUTIE					0011 /10 /00	
2	PVC	51X70	1	116C	400536	APPROVED	JIANGUO-TANG	DATE	2011/10/08	
1	CELL	D	1	NI-CD		SCALE		UNIT	ММ	
N□.	NAME	SIZE	QTY	NOTE	SAP NO	SCALE		OINTI	141141	