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Specification

Product Specification

Name：	Ni-Cd Rechargeable Battery
Model:	SC1700mAh
Author:	
Review:	
Approval:	
Date:	2020/04/7

1. APPLICATIONS

The specification applies to the following sealed Ni-CD rechargeable battery.

Model：SC1700mAh APPLICATION：Electric Tools and Electric toys Etc

2.WORKING THEORY

At the positive electrode: $2NiOOH+2H_2O+2e \rightleftharpoons 2Ni(OH)_2+2OH^-$

At the negative electrode: $Cd+2OH^--2e \rightleftharpoons Cd(OH)_2$

Overall reaction： $Cd+2NiOOH+2H_2O \rightleftharpoons 2Ni(OH)_2+Cd(OH)_2$

3. Battery Model

3.1 Type ： Sealed Ni-CD Rechargeable battery

3.2 Number：SC1700

3.3 Specification：SC1700

4. ELECTRICAL PERFORMANCE

4.1 Nominal voltage：	1.2V
4.2 Nominal Capacity：	1700mAh/0.2C_5A
4.3 Weight：	42g (unit cell)
4.4 Stand Discharge：	340mA (0.2C_5A) × 7.5hours
4.5 Normal charge：	680mA (0.4C_5A) × 3.5hours
4.6 Quick charge：	1700mA (1C_5A) × 75min
	($-\Delta V$=15mV、)
4.7 Trickle charge	57～95mA (0.03C_5A～0.05C_5A)

4.8 Operate temperature range :(Max relative humidity:85%)

Stand Discharge：	0～＋55℃
Quick charge：	0～＋55℃
Trickle charge：	0～＋45℃
Discharge：	-18～＋65℃

4.9 Storage temperature range (Max relative humidity:85%)

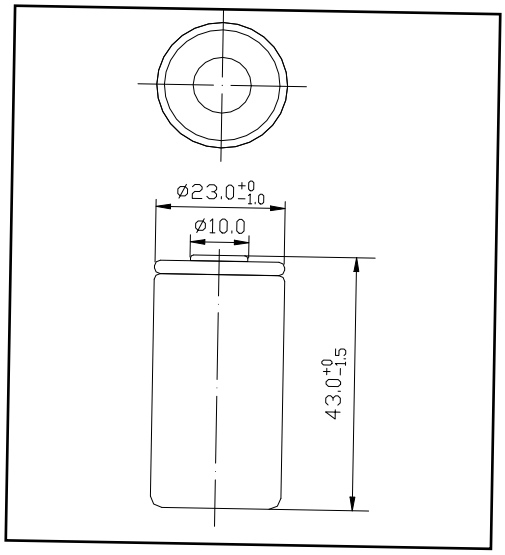
Within one week：	-18～＋65℃
Within a month：	-18～＋55℃
Within six months：	-18～＋45℃
Within two years：	-18～＋30℃

5. Configuration and dimensions

Performance (monomer battery)

Nominal voltage			1.2V	
(mAh)			0.2C[1]	1C[2]
	Minimum		1700	1510
diameter			$23.0^{+0}_{-1.0}$ mm	
height			$43.0^{+0}_{-1.5}$ mm	
weight			About 42g	
resistance (1000Hz.)			≤10mΩ	
charge	standard		0.2 C_5A	
	fast		1C_5A	
	trickle	MAX	0.05C_5A	
		MIN	0.03C_5A	
Ambient temperature	charge	standard	0℃~55℃	32~131 ºF
		fast	0℃~55℃	32~131 ºF
	discharge		-18℃~55℃	-0.4~131 ºF
	storage	Six months	-18℃~45℃	-0.4~113ºF
		Two years	-18℃~30℃	-0.4~86ºF

External Appearance dimension (after packing)



[1] 20 ℃ ambient temperature ,0.2C charging7.5 hourS, rest 1 hour , discharge by 0.2c to 1.0V/cell
[2] 20 ℃ ambient temperature ,0.2C charging7.5 hourS, rest 1 hour ,
discharge by 1c to 1.0V/cell
[3] weight for reference
[4] 0.2C charging 7.5 hourS
[5] 0.4C charging 80 minutes、-ΔV=15mV、TOC＝45℃
[6] discharge by 0.2c to 1.0V/cel

6. Performance

6.1

）Unless otherwise stated , tests should be done within one month of delivery under the following conditions, before charging,the battery need discharge by0.2C_5A to 1.0v/CELL under test condition;

Test Condition:

Temperature ： ＋20±5℃

Humidity ： 45%～85%

Note: standard charging methods：360 mA（0.2C_5A）(charge)7.5(hours)

Normal charging methods：720 mA（0.4C_5A）(charge)3.5(hours)

Standard discharge methods：360mA（0.2C_5A）discharge 1.0v/CELL

6.2 Test method & performance

Test	Unit	Specification	Conditions	remarks
Capacity	mAh	1700	standard charge and discharge	3 cycles are allowed
Shipment Voltage	伏特/只 V/cell	≥0.8		AQLⅡ=0.65%
Open Circuit Voltage	V/cell	≥1.3	Within 1 hour after standard charge	
Open Circuit Voltage	mΩ/cell	≤10	1.0C_5A Charge 80minutes ,rest one hour , measure the impedance with LCR instrument (AC 1KHz)	
1C_5A Discharge	minute	≥54	Before discharge, standard charging methods charge	End Voltage 1.0V/PCS
High rate Discharge （5C_5A）	minute	≥9	Before discharge, standard charging methods charge	End Voltage 0.8V/PCS

High rate Discharge （$10C_5A$）	minute	≥4	Before discharge, standard charging methods charge	End Voltage 0.7V/PCS
over charge	hour	≥ 5	charge for 48hours , rest 1 -4 hours , discharge to 1.0V/CELL by $0.2C_5A$	End Voltage 0.8V/PCS
Charge Retention	mAh	≥(65%CN)	Storage 28 days after stand charge , standard discharge	Ambient Temperature 20±2℃
Cycle life	time	≥500	IEC61951-2(7.4.1.1.1)	Refer .to Note
Leakage test		No leakage or deformation	Fullycharged at 1200mA(1C5A), then storagefor 14 days	环境温度 Ambient Temperature 20±5℃

Note: Cycle life { IEC61951-1(7.4.1. 1.1)}

Before test , it need discharge to 1.0V/cell by $0.2I_tA$, then test at 20±5℃Ambient Temperature

cycle no.	charge	rest	discharge
1	$0.1I_tA$for 16h	none	discharge 140 minutes by$0.25I_tA$:
2－48	$0.25I_tA$for3h10min [a]	none	discharge 140 minutes by$0.25I_tA$:
49	$0.25I_tA$for 3h10min	none	discharge to 1.0V/CELL by $0.25I_tA$
50	$0.1I_tA$for16h	1to 4h	discharge to 1.0V/CELL by $0.2I_tA$

Cycles 1 to 50 shall be repeated until the discharge duration on any 50 th cycle becomes less than 3 hThe total number of cycles obtained when the test is completed shall be not less than 500.。

6.3 Storage

After a open-circuit storage of 12 months, the battery can be charged and discharged at $0.2C_5A$～$0.5C_5A$ immediately(this cycle allowed in five times). 0.2 C discharge capacity is not less than 80% of the initial capacity.

6．4Vibration

The battery keep a normal performances when tested with the amplitude at 4 mm (0.158 inch) and the frequency at 1000.

6．5 Drop test

The battery shall keep a normal performances when dropped to the wooden board at a height of 450mm(17.716 inch).

6．6 Safety performance

6.6.1 Over discharge

External resistance, make the battery a discharge 24 hours (external resistance (m Ω) = 1.2 V × n ×

1000/2 C5A), battery no leakage and deformation.

6.6.2

Test method: 0.2 C5A discharge battery to 0 V, then increase the discharge current to 1.0 C5A, and keep 1 hour. The battery no burst, no explosion, allow the leakage and deformation.

6.6.3

Test methods: 1 C5A charging the battery 80 minutes,,Short circuit 1.0 hours. The battery no explosion, allow the leakage and deformation.

7 the termination voltage of 1.0 V/cell;
if over 1.1 v, it will cann'tt effective use of capacity !
if under 1.0 V, it will lead to a over discharge or reverse charge !

8 SUGGESTION & ADVICE

8.11 Reverse charging is not acceptable .
8.12 Do not incinerate or mutilate batteries,
8.13 Do not solder directly to batteries.
8.14 Do not mix new batteries in use with semi-used batteries
8.15 If find any noise, excessive temperature or leakage from a battery, please stop using.
8.16 Keep away from children.
8.17 Store batteries in a cool dry place.
8.18 Use the suitable charger for batteries.