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## 1. Scope

This specification is suitable for the performance of following nickel cadmium cylindrical cell and its stack-up battery packs:

**Model: D-SC1900mAh Flat Cap**

**Size: SC**

The data involving nominal voltage and approximate weight of a battery pack shall be equal to the value of the unit cell multiplied by the number of unit cells in the battery pack. An example, for a battery pack which consisting of 3 cells:

Nominal voltage of unit cell = 1.2V

So, nominal voltage of the battery pack =  $1.2V \times 3 = 3.6V$

## 2. Performance and Test Methods

Unless special stated, tests should be done within one month of delivery under the following conditions:

Ambient Temperature:  $20 \pm 5^\circ\text{C}$ .

Ambient Humidity:  $65 \pm 20\%$ .

Test Item	Test Conditions	Request
<b>1. Standard Charge</b>	Charge is conducted continuously for 16 hours at the constant current of 190mA after pre-discharge at the constant current of 380mA up to an cut-off voltage of 1.0V.	
<b>2. Open-circuit Voltage</b>	Voltage between terminals of the charged battery specified in item(1) is measured after rest for 1 hour.	$\geq 1.25V$
<b>3. Capacity</b>	Discharge time of the charged battery specified in item(1) is measured at 380mA up to an cut-off voltage of 1.0V after rest for 30 minutes. If the discharge time doesn't reach the specified value, the test may be carried out further twice, up to three times in total.	$\geq 300$ minutes
<b>4. Capacity (high-rate -discharge)</b>	Discharge time of the charged battery specified in item(1) is measured at 950mA up to an cut-off voltage of 1.0V after rest for 30 minutes. If the discharge time doesn't reach the specified value, the test may be carried out further twice, up to three times in total.	$\geq 110$ minutes

Battery Spec---D-SC1900mAh

Test Item	Test Conditions				Request
<b>5.Cycle Life</b>	Cycles	Charge	Rest	Discharge	≥500 cycles
	1	0.1CmA×16h	None	0.25CmA×140min	
	2-48	0.25CmA×190min	None	0.25CmA×140min	
	49	0.25CmA×190min	None	0.25CmA to 1.0V/Cell	
	50	0.1CmA×16h	1-4h	0.2CmA to1.0V/Cell	
	Cycles 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3h. Note: IEC61951-1 0.1CmA=1900mA×0.1=190mA ,the rest may be deduced by analogy.				
<b>6.Internal Resistance</b>	The battery is measured at 1KHz with charge state.				≤10m Ω
<b>7.Over-charge</b>	Charge is conducted continuously for 48 hours at 190mA after the capacity test specified in item(3).				No deformation and leakage
<b>8.Over-discharge</b>	Forced discharge is conducted for 24 horus at a constant current of 0.3 Ω after pre-discharge at a constant current of 380mA up to 1.0V.				No external deformation
<b>9.Self-discharge</b>	The charged battery specified in item(1) is stored for 28 days at 20°C, and the discharge time is measured at 380mA.				≥195 minutes
<b>10.Humidity</b>	The charged battery is stored for 10 days at 33±3°C and 80±5% of relative humidity.				No electrolyte leakage
<b>11.Safety Valve Operation</b>	Forced discharge is conducted for 30 minutes at a constant current of 1900mA after pre-discharge at a constant current of 380mA up to 0V.				Not explode or disrupt. *
<b>12.Drop Test</b>	The battery is subjected to a drop, which has a height of 1m (39.3inches) to an oak board of 10mm or more thick in a voluntary axis respectively 3 times.				Mechanically and electrically normal
<b>Note:</b> * Electrolyte leakage and deformation of battery are acceptable.					

### **3. Configuration, Dimensions and Markings**

**Please refer to the attached drawings.**

### **4. General Characteristics**

**Please refer to the attached drawings.**

### **5. Suggestions & Cautions:**

**5.1 The cut-off voltage is recommended at  $1.0\pm 0.1V$ /cell.**

**5.2 Charge the batteries prior to use.**

**5.3 Don't solder directly to the battery.**

**5.4 Don't short circuit and reverse charge.**

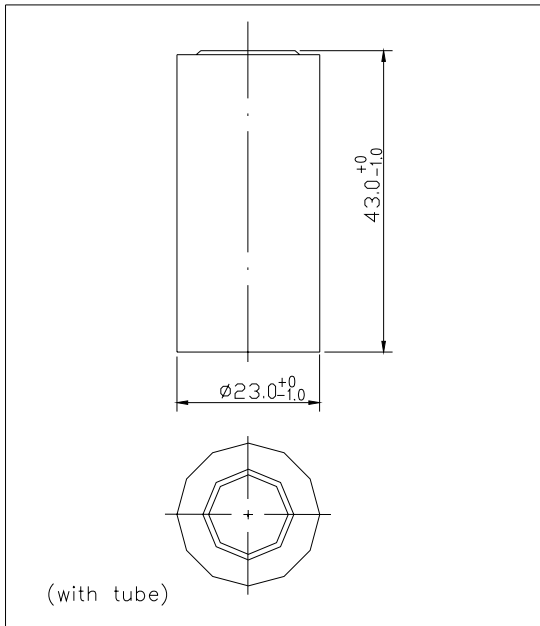
**5.5 Do not dispose of in fire and keep away from damage.**

**5.6 Store the batteries uncharged in a cool and dry place.**

**5.7 The batteries' life may be reduced if they are subjected to adverse conditions such as: extreme temperature, deep cycling, excessive overcharge/discharge.**

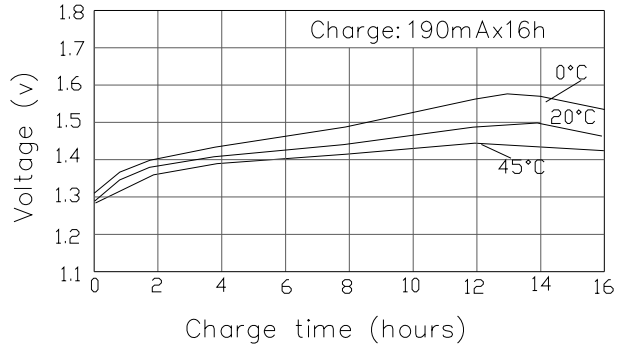
# Battery Spec---D-SC1900mAh

Single specifications		
Product Name	Sealed Nickel Cadmium Cylindrical Rechargeable Battery	
Model	D-SC1900mAh	
Nominal Voltage	1.2V	
Nominal Capacity	1900mAh	
Dimension (with tube)	Diameter	23.0 <sup>+0</sup> <sub>-0.7</sub>
	Height	43.0 <sup>+0</sup> <sub>-1.0</sub>
Approx Weight	49g	
Internal Resistance at 1000Hz	≤ 10mΩ (After charge)	
Charge	Standard	190mA × 16h
	Rapid	950mA × 2.5h
	Trickle	57~95mA
Discharge Cut-off Voltage	1.0V	
Cycle Life	≥ 500 Cycles	
Ambient Temperature	Standard Charge	0°C to 45°C
	Rapid Charge	10°C to 40°C
	Trickle Charge	0°C to 45°C
	Discharge	-20°C to 65°C
	Storage	-20°C to 45°C
Ambient Humidity	65±20%	

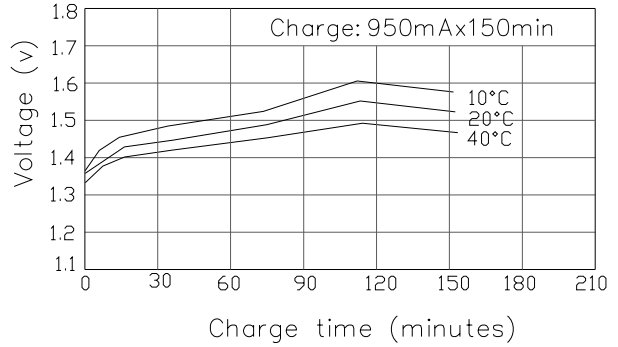


## General Characteristics

Standard charge



Rapid charge



Discharge characteristics

