



Specification Approval Sheet

Name: Nickel Cadmium Battery

Model: 20400

SPEC: 1.2V 2500mAh

Approved By	Checkup	Make

Customer Confirmation	Signature	Date
	Company Name :	
	Stamp :	

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1. Application

This specification governs the performance of the following Nickel-Cadmium Cylindrical battery Manufactured by Tenergy Corporation.

2. Specification

Description	Unit	Specification	Conditions
Nominal Voltage	V	1.2	Unit cell
Nominal Capacity	mAh	2500	Standard Charge/Discharge
Standard Charge	mA	250(0.1C)	Ambient Temperature: Ta= 0~45oC
	Hour	16	
Quick Charge	mA	1000(0.4C)	Ambient Temperature: Ta=10~40°C -ΔV=10mV
	hr	3.5	
Fast Charge	mA	1250 (0.5C)	
	hr	2.5 (see Note 2)	
Trickle Charge		(0.03C)~(0.05C)	Ta= 0~45°C
Standard discharge	mA	500(0.2C)	Ambient Temperature: Ta= -20~65°C Humidity: Max 85%
Discharge Cut-off Voltage	V	1.0	
Storage Temperature	oC	-20~25°C /Within 1year	Discharged rate, Humidity, Max.60%
		-20~35°C /Within 6 Months	
		-20~45°C /Within 3 Months	Discharged rate, Humidity, Max.80%
Typical Weight	g	Approx. 63	Unit cell



3. Performance

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

Test	Unit	Specification	Other Condition	Remark
Capacity	mAh	≥2500	Standard Charge Discharge	up to 3 cycles are allowed
Open Circuit Voltage(OCV)	V/Cell	≥1.25	Within 1 hour after standard Charge	
Internal Impedance	mΩ/ Cell	≤15	Upon fully charge(1KHz)	
High Rate Discharge(1C)	minute	≥54	Quick Charge, 0.5 hour rest Before Discharge by 1C to 1.0 V/cell	up to 3 cycles are allowed
Overcharge		No leakage nor deformation	0.1C Charge 28 days	
Charge Retention	mAh	≥1625 (65%)	Standard Charge, Storage : 28 days, Standard Discharge	
IEC Cycle Life	Cycle	≥500	IEC61951-1(2003)7.4.1.1	(see Note 3)
Leakage Test		No leakage nor deformation	Fully charged at 0.5C for 2.5 hour stand for 14 days	
Vibration Resistance		Change of voltage should be under 0.02V/cell, Change of impedance should be under 5 m-ohm/cell	Charge the battery 0.1C 14hrs, then leave for 24hrs, check Battery before/after vibration, Vibration 3000 CPM any direction for 60mins.	Ambient Temperature: Ta=20±5°C
Impact Resistance		Change of voltage should be under 0.02V/Cell Change of impedance should be under 5mΩ/ Cell	Charge the cell 0.1C 14hrs Then leave for 1~4hrs,check battery before/after dropped, Height 50cm Wooden board (thickness 30 mm) Direction not specified,3 times.	Ambient Temperature: Ta=20±5°C
Short Circuit		Leakage & deformation may occur, but no explosion is allowed	After standard charge, be short-circuited by a maximum 0.1 ohm resistance.	



4. CONFIGURATION, DIMENSIONS AND PACKINGS

Please refer to the attached drawing.

5. EXTERNAL APPEARANCE

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage nor deformation.

6. CAUTION

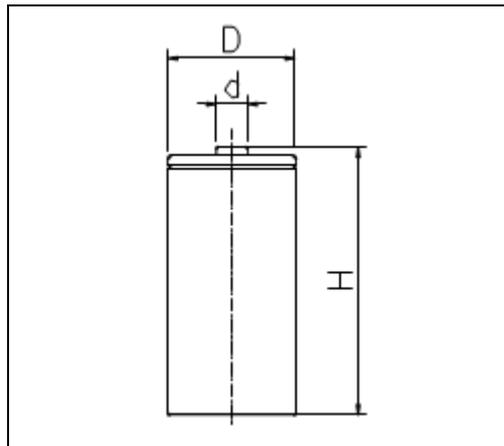
1. Reverse charging is not acceptable.
2. Charge before use. The cells/batteries are delivered in an uncharged state.
3. Do not charge/discharge with more than our specified current.
4. Do not short circuit the cell/battery Permanent damage to the cell/battery may result.
5. Do not incinerate or mutilate the cell/battery.
6. Do not solder directly to the cell/battery.
7. the life expectancy may be reduced if the cell/battery is subjected adverse conditions like: extreme temperature, deep cycling, excessive overcharge/ over-discharge.
8. Store the cell/battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment.

Notes:

1. Ta: Ambient Temperature.
2. Approximate charge time from discharged state is for reference only.
3. We recommend cells or batteries are charged and discharged at least once every 6 months.
4. IEC61951-1(2003)7.4.1.1 Cycle Life:

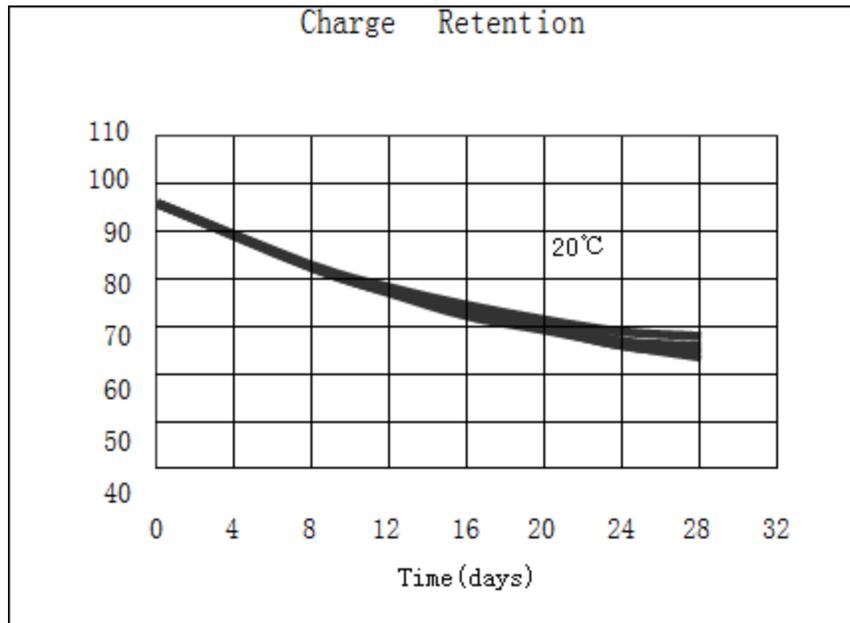
Cycle No.	Charge	Rest	Discharge
1	0.1C×16h	None	0.25C×2h20min
2-48	0.25C×3h10min	None	0.25C×2h20min
49	0.25C×3h10min	None	0.25C to 1.0V
50	0.1C×16h	1-4h	0.2C to 1.0V

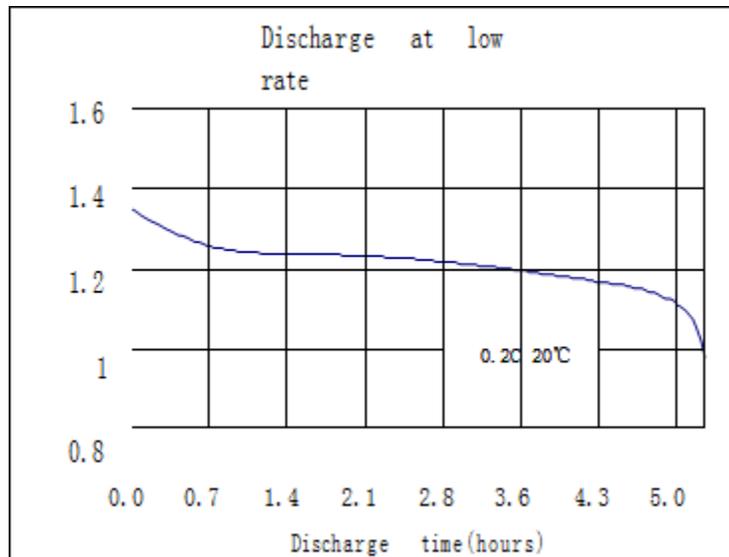
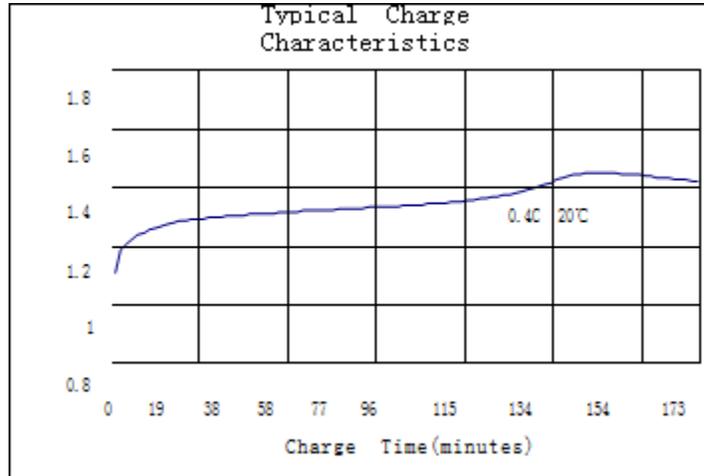
Cycles 1 to 50 shall be repeated until the discharge duration on any 50th.
Cycle becomes less than 3 h.

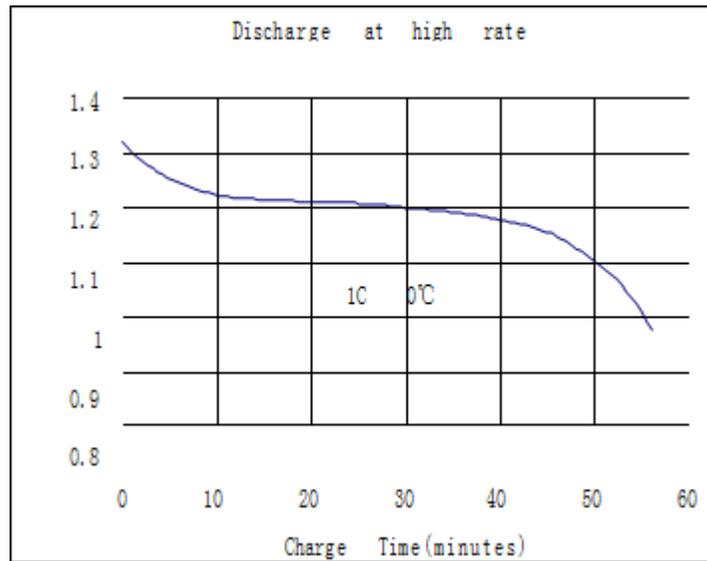


Dimension of the cell

	Crew cut	Acumination
D	25.4 ± 0.5	25.4 ± 0.5
d	10.0 ± 0.10	6.0 ± 0.10
H	48.1 ± 0.5	49.5 ± 0.5







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2. Manufacturer reserves the right to alter or amend the design model and specification without prior notice.