1． SCOPE

This specification governs the performance of the following cylindrical cell and its stack-up batteries:

Model No. **NI-CD TY-C2500HT High Temperature**

This data involving nominal voltage and the approximate weight of stack-up batteries shall be equal to the value of the unit cell multiplied by the number of unit cells in the battery. For example, a stack up battery consists of five unit cell:

Nominal voltage of unit cell=1.2V

Thus, nominal voltage of stack up battery=1.2*5=6.0V

2． RATING

Description	Unit	Specification	Conditions
Nominal Voltage	V/cell	1.2	Unit Cell
Nominal Capacity	mAh	2500	Standard Charge/Discharge
Nominal Dimension (with sleeve)	mm	Φ=25.5±0.5 H=49.5±0.5	Unit Cell
Weight Approx.	g	70	Unit Cell
Standard Charge	mA	250(0.1C)	T=0～50℃
	hour	15	
Trickle Charge	mA	83～125 (0.033C～0.05C)	T= -10～70℃
Standard Discharge	mA	500(0.2C)	T= -20～60℃ Cut-off Voltage=1.0V/Cell
Storage Temperature	℃	-20 ～35	Discharge State

3．PERFORMANCE

Unless otherwise stated, tests should be done within one month of delivery.

Under the following conditions:

Ambient Temperature, T：20±5℃

Relative Humidity,：65±20%

Note.1: Standard Charge/Discharge Condition:

Charge： 250 mA（0.1C）×15hrs

Discharge： 500 mA（0.2C）to 1.0V/cell

Test	Unit	Specification	Conditions	Remarks
Capacity	mAh	≥2500	Standard Charge/Discharge	Up to 5 cycles are allowed
Open circuit voltage(CCV)	V/Cell	≥1.25	Within 1 hour after standard charge	
Internal Impedance	mΩ/Cell	≤15	Upon fully charge (1KHZ)	Unit cell
Overcharge	N/A	No leakage nor explosion	125mA (0.05C) charge 28 days	T=20±5℃
Reverse charge	N/A	Leakage& deformation may occur, but no explosion is allowed	0.2CmA discharge to 0V, then reverse charge with 1CmA for 1 hour	
Charge Retention	mAh	≥1625(65%)	Standard charge, Storage:28 days, Standard Discharge	
IEC Cycle Life	Cycle	*See note.2*	IEC61951-1:2003	
Short circuit	N/A	Leakage& deformation may occur, but no explosion is allowed	After standard charge, short circuit for 1 hour. (load ≤100mΩ for 24hrs)	

Mechanical test	hour	t(duration of discharge) ≥5	Charge the battery 0.1CmA 15hrs, carry out bump test under the following condition: Peak acceleration(A):98n/s²(10G) Corresponding duration of pulse(D) 16ms Corresponding velocity change 1.00m/s Number of bumps 1000±10 Then stand for 1～4hrs, Discharge at 0.2CmA	

4．EXTERNAL APPEARANCE

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

5．CAUTION

1. Reverse charge is not acceptable.
2. Charge before use. The cells/batteries are delivered in an uncharged state.
3. Do not charge/discharge with more than specified current.
4. Do not short circuit the cell/battery.
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 to adverse conditions like: extreme temperature, deep cycling, excessive overcharge/over-discharge.
8. Store the cell/battery uncharged in cool dry place. Always discharge batteries before bulk storage or shipment.

Note.2 :

Ambient temperature: 20±5℃

Before the endurance in cycles test, the cell shall be discharged at 0.2CmA to a final voltage of 1.0V.

The following endurance test shall be carried out at constant current throughout,using the conditions specified in **table1**.Precautions shall be taken to prevent the cell-case temperature from rising above 35℃ during the test, by providing a forced air draught if necessary.

Table 1-endurance in cycles

Cycle number	Charge	Stand in charged condition	Discharge
1 2 to 48 49 50	0.1CmA for 16h 0.25CmA for 3h10min 0.25CmA for 3h10min 0.1CmA for 16h	None None None 1h to 4h	0.25CmA for 2h20min 0.25CmA for 2h20min 0.25CmA to 1.0V 0.2CmA to 1.0V
*it is permissible to allow sufficient open-circuit rest time after the completion of discharge at cycle 50,so as to start cycle 51 at an exact two-week interval.			

Cycle 1 to 50 shall be repeated until the discharge duration on any 50th cycle becomes less than 3h.At this stage, a further cycle as specified for cycle 50 shall be carried out.

The endurance test is considered complete when two such successive cycles give a discharge duration less than 3h.the number of cycles obtained when the test is completed shall be not less than 50.

Note.3:

Prior to the test, the cell shall be discharged at 0.2CmA at 20±5℃ to a final voltage of 1.0V and stored for not less than 16h and not more than 24h at an ambient temperature of 40±2℃.

The cell shall than be charged and discharged at constant currents under the conditions specified in table 2 while maintained in an ambient temperature of 40±2℃ or 70±2℃ respectively as appropriate.

The discharge conditions A or B may be chosen to suit the users requirements. The discharge is carried out immediately on completion of charging.

After performing the first charge efficiency test at 40℃ the cell is stored for not less than 16h and not more than 24h at an ambient temperature of 70±2℃.

During the ageing period of six months at 70℃, precautions shall be taken to prevent the cell-case temperature from rising above 75℃,by providing a forced air draught if necessary.

The discharge duration of the three cycles at 70℃ shall be recorded leakage of electrolyte shall not occur during this test.

After completion of the ageing period, the cells shall be stored for not less than 16h and not more than 24h at an ambient temperature of 40±2℃. The three cycles at 40℃ of the initial charge efficiency test are then repeated using the conditions specified in table 2.The duration of discharge shall be not less than the minimum specified in table 2

Table 2-Permanent charge endurance

Cycle number	Ambient temperature	Charge	Discharge A or B*	Minimum Discharge duration
1		0.05CmA for 48h	A:0.2CmA to 1.0V or B:1.0CmA to 1.0V	No requirement
2	40℃±2℃	0.05CmA for 24h	A:0.2CmA to 1.0V or B:1.0CmA to 1.0V	3h45min 42min
3		0.05CmA for 24h	A:0.2CmA to 1.0V or B:1.0CmA to 1.0V	3h45min 42min
4		0.05CmA for 60 days	A:0.2CmA to 1.0V or B:1.0CmA to 1.0V	
5	70℃±2℃	0.05CmA for 60 days	A:0.2CmA to 1.0V or B:1.0CmA to 1.0V	No requirement
6		0.05CmA for 60 days	A:0.2CmA to 1.0V or B:1.0CmA to 1.0V	
7		0.05CmA for 48h	A:0.2CmA to 1.0V or B:1.0CmA to 1.0V	No requirement
8	40℃±2℃	0.05CmA for 24h	A:0.2CmA to 1.0V or B:1.0CmA to 1.0V	2h30min 24min
9		0.05CmA for 24h	A:0.2CmA to 1.0V or B:1.0CmA to 1.0V	2h30min 24min