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# SPECIFICATION

<b>Type:</b>	Ni-MH Cylindrical Cell
<b>Model No.:</b>	IMX-2200Cs
<b>Prepared:</b>	HML
<b>Approved:</b>	LFX
<b>Date:</b>	Jul 17, 2004



## 1. PREFACE

This specification applies to the Intec Nickel-Metal Hydride Cylindrical batteries or battery packs. Intec reserves the right to alter the product design or amend this specification without prior notice.

## 2. TYPE

This specification applies to the following sealed nickel-metal hydride battery.

Type: IMX-2200Cs  
Size: Cs

## 3. CHARACTERISTICS

- ★ Nominal voltage: 1.2 V.
- ★ Nominal capacity: 2200 mAh (0.2C)
- ★ Standard charge: 220 mA × 15h
- ★ Quick charge: 2200 mA × 1.2h (-ΔV = 10 mV)
- ★ Discharge cut-off voltage: 1.0 V/cell (20°C)
- ★ Max current of constant discharge: 15 A (20°C, unit cell)
- ★ Max current of momentary discharge: 25 A (20°C, unit cell)
- ★ Operating temperature range: (Max relative humidity: 85%)
  - Standard charge -10 ~ +50°C
  - Quick charge 0 ~ +45°C
  - Discharge -20 ~ +65°C
- ★ Storage temperature range: (Max relative humidity: 85%)
  - Within two years -20 ~ +30°C
  - Within six months -20 ~ +45°C
  - Within one month -20 ~ +55°C
  - Within one week -20 ~ +65°C

## 4. DIMENSION/WEIGHT

- 4.1 Dimensions: Φ22.5 × 42.5 (mm).
- 4.2 Gross weight: 58 (g).

## 5. CELL PERFORMANCE

### 5.1 TEST REQUIREMENTS

The following conditions are for new batteries (within one month after delivery under the test method of 5.2)

Environmental temperature: +15 ~ +25°C. Relative humidity: 45% ~ 85%.



**5.2 TEST METHOD AND PERFORMANCES**

**5.2.1 APPEARANCE**

The battery should be free from stretches, dirt, dents, and rusts.

**5.2.2 CAPACITY**

Charge with 0.1C for 15 hours then discharge with 0.2C to the end-voltage 1.0 V/unit, the capacity shall be more than 2200 mAh.

**5.2.3 OPEN-CIRCUIT VOLTAGE**

The open-circuit voltage within one hour after full charge shall be more than 1.25V/unit.

**5.2.4 INTERNAL IMPEDANCE**

Within one hour after full charge, the internal impedance shall be less than 12 mΩ /cell.

**5.2.5 SELF-DISCHARGE**

The capacity shall be more than 1320mAh after the storage of 28 days for the fully charged battery.

**5.2.6 OVER-CHARGE**

The battery shall not cause salting, leakage or deformation when charged at 220 mA for 48 hours and the capacity shall be more than 2200 mAh.

**5.2.7 OVER DISCHARGE**

The battery shall not cause deformation when it is discharged for 24 hours with the external resistance at 0.2Ω.

**5.2.8 LIFE-SPAN**

The capacity shall be more than 1320 mAh after 500 cycles with the test conditions as follow:

*TEST CONDITION*

Cycle-th	Charge	Rest	Discharge
1	Charge at 0.1C for 15 hours	None	Discharge at 0.25C for 2.33 h
2 ~ 48	Charge at 0.25C for 3.17 hours	None	Discharge at 0.25C for 2.33 h
49	Charge at 0.25C for 3.17 hours	None	Discharge at 0.25C to 1.0V/unit
50	Charge at 0.1C for 15 hours	1 ~ 4 hours	Discharge at 0.2C to 1.0V/unit

**5.2.9 STORAGE**

Within 14 days, the battery shall not cause leakage at 30-60°C with the relative humidity at 75%-85%.

**5.2.10 VIBRATION**

The battery shall not cause damage to its performances when tested with the amplitude at 4 mm (0.158 inch) and the frequency at 1000Hz.



**5.2.11 DROP TEST**

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

**5.2.12 SHORT CIRCUIT**

The fully charged battery shall not explode when shorted directly by wires.

**5.2.13 INCORRECT POLARITY CHARGE**

Discharge at 0.2C to the end voltage 0V, then discharge by force at 1C rate for 60 minutes, and the battery should not explode or break.

**6. SUGGESTION & ADVICE**

- A. The end-voltage is recommended at  $1.0 \pm 0.1V$ /cell.
- B. The battery may go fail when shorted, over-charged or charged with incorrect polarity.
- C. Avoiding soldering directly to the battery.
- D. Do not dispose of in fire and keep away from damage.

**7. REFERENCE**

Please refer to Intec's Customer Service if there is any question on using batteries.

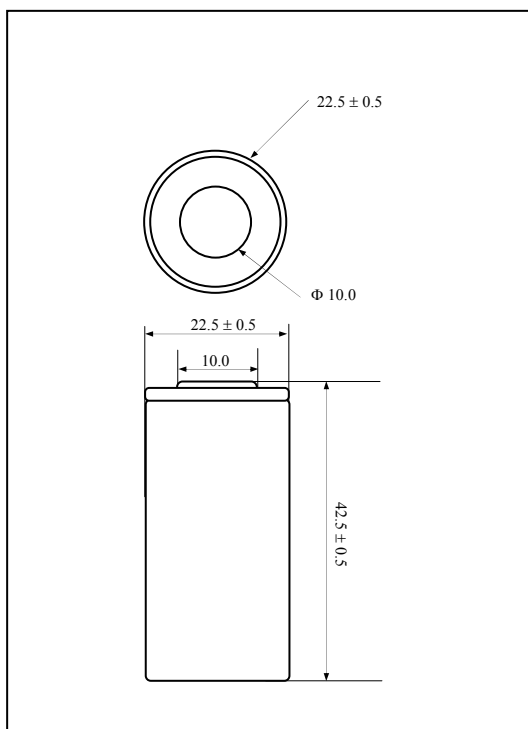


**Specifications**

<b>Nominal voltage</b>		<b>1.2V</b>	
<b>Capacity (mAh)</b>	<b>Nominal</b>	<b>C/5</b>	<b>C</b>
	<b>Typical</b>	<b>2200</b>	<b>1980</b>
<b>Diameter</b>		<b>0.89 ± 0.02 in</b> <b>22.5 ± 0.5 mm</b>	
<b>Height</b>		<b>1.67 ± 0.02 in</b> <b>42.5 ± 0.5 mm</b>	
<b>Weight</b>		<b>58g</b>	
<b>Internal impedance at 1000Hz.</b>		<b>≤ 12mΩ</b> <b>(After charge)</b>	
<b>Charge</b>	<b>Standard</b>	<b>220mA × 15h</b>	
	<b>Quick</b>	<b>2200mA × 1.2h</b>	
<b>Ambient temperature</b>	<b>Charge</b>	<b>Standard</b>	<b>-10°C ~ 50°C</b>
		<b>Quick</b>	<b>0°C ~ 45°C</b>
	<b>Discharge</b>	<b>-20°C ~ 65°C</b>	
<b>Storage</b>		<b>-20°C ~ 45°C</b>	

Note:

1. Nominal capacity, rated at C/5, 20°C.
2. Other capacities are for reference.
3. Weight and internal impedance are for reference.



**Typical characteristics**

