Intec Industries Co., Ltd.
Room 2703, Well Tech Centre
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SPECIFICATION

Type:	Ni-MH Cylindrical Cell
Model No.:	IMH-400AAAS
Prepared:	HML
Approved:	LFX
Date:	16-Sep-2009

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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. SCOPE

This specification applies to nickel metal hydride cylindrical rechargeable single cell.
Type: IMH-400AAAS .
Size: 2/3 AAA .

3. CHARACTERISTICS

- Nominal Voltage : 1.2 V
- Nominal Capacity : 400 mAh
- Standard Charge : 40 mA x 16h
- Fast Charge : 200 mA x 2.1h (- ΔV = 5mV/ cell)
- Trickle Charge : 12 -20 mA x permanent
- Discharge cut-off voltage: 1.0 V/unit (20°C)
- Operating Temperature Range: (Max relative Humidity 85%)
  - Standard charge: 0 ～ +45°C
  - Fast charge : 10 ～ +45°C
  - Trickle charge : 0 ～ +45°C
  - Discharge : - 20 ～ +60°C
- Storage Temperature Range: (Max relative Humidity 85%)
  - 2 years : - 20 ～ +30°C
  - 6 months : - 20 ～ +45°C
  - 1 month : - 20 ～ +50°C
  - 1 week : - 20 ～ +60°C

4. DIMENSION / WEIGHT

Dimensions: $\Phi 10.5^{+0}_{-0.7}$ x 28.5 ± 0.7 (mm);

Gross weight: 7.5 (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 5.2.2).
Environmental Temperature: +15 ~ +25℃; Relative humidity: 45% ~ 85%.

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5.2 TEST METHOD AND PERFORMANCES

5.2.1 APPEARANCE
The cell should be free from stretches, dents, dirt 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 400 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 55 mΩ/cell.

5.2.5 SELF-DISCHARGE
The capacity shall be more than 240 mAh after the storage of 28 days for the fully charged battery.

5.2.6 SAFETY DEVICE OPERATION
The battery shall be no disrupt or burst, but the leakage of electrolyte and the deformation of the battery are allowed when the battery discharged at 0.2C (at 20±5℃)until 0V then discharged at 1C for 2h.

The battery shall be no disrupt or burst, but the leakage of electrolyte and the deformation of the battery are allowed after the battery is charged at 0.1C for 16h and short-circuit the battery for 1h.

5.2.7 OVERCHARGE
The battery shall be no leakage, no disrupt, no burst when charged at 0.1C for 48 hours.

5.2.8 LIFE-SPAN(CUSTOM)
The capacity shall be more than 240 mAh after 500 cycles with the test conditions as follow:

TEST CONDITION

Cycle-th	Charge	Rest	Discharge
1	Charge at 0.1C for 16 hours	None	Discharge at 0.25C/5 for 2.33 h
2 ~ 48	Charge at 0.25C for 3.2 hours	None	Discharge at 0.25C/5 for 2.33 h
49	Charge at 0.25C for 3.2 hours	None	Discharge at 0.25C/5 to 1.0V/unit
50	Charge at 0.1C for 16 hours	1 ~ 4 hours	Discharge at 0.2C/5 to 1.0V/unit

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

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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

The battery shall not explode when charged for 5 hours with the polarity being reverse.

5.2.14 OVER CHARGE II

The battery shall not explode when charged at 1C for 2 hours.

6 CAUTION

A. The end-voltage is recommended at 1.0±0.1V/unit.

B. The battery may go fail when shorted, over-charged or charged with incorrect polarity.

C. Avoid 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.

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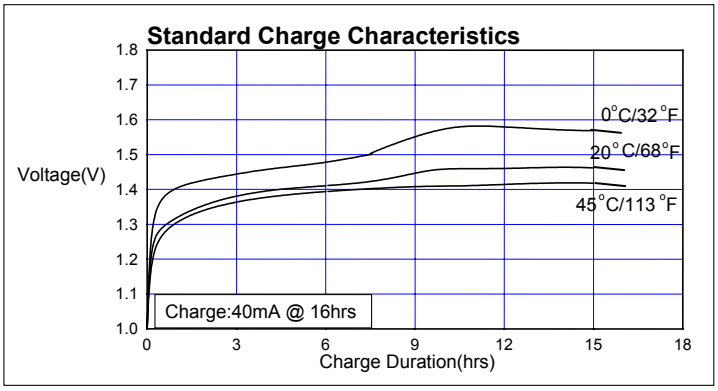
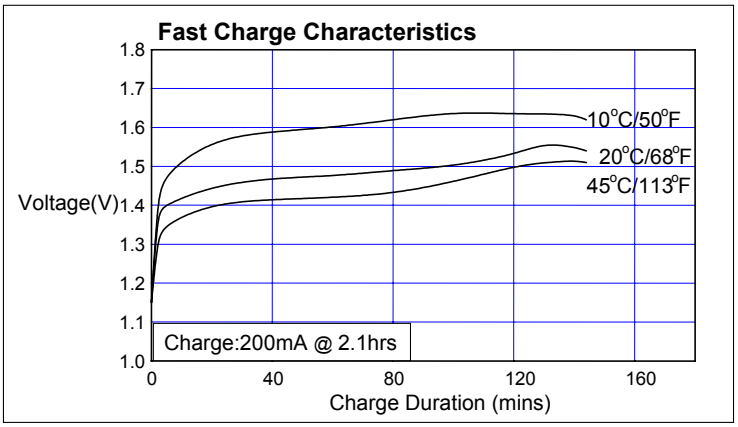
Specifications

Nominal voltage			1.2V	
Capacity (mAh)			0.2C	1C
	Nominal		400	360
	Typical		420	370
Diameter			$0.41 \pm {}^{+0}_{-0.028}$ in $10.5 \pm {}^{+0}_{-0.7}$ mm	
Height			1.12±0.028 in 28.5±0.7 mm	
Weight			7.5g	
Internal impedance at 1000Hz.			55mΩ (After charge)	
Charge	Standard		40mA×16hrs.	
	Fast		200mA×2.1hrs.	
	Trickle	Max.	20mA	
		Min.	12mA	
Ambient temperature	Charge	Standard	0℃～45℃ 32°F～113°F	
		Fast	10℃～45℃ 50°F～113°F	
	Discharge		-20℃～60℃ -4°F～140°F	
	Storage		-20℃～45℃ -4°F～113°F	





Note:

1. **Nominal capacity, rated at 0.2C,20℃.**
2. **Other capacities are for reference.**
3. **Weight and internal impedance are for reference.**