



This specification shall be applied to Lithium rechargeable battery cell supplied by AA Portable Power Corp.

Product Specification

| Type | Cylindrical Lithium Ion Cell | Note |
|---|---|---|
| Model | 10440 | |
| Voltage | Nominal: 3.7V | Mean Operation Voltage |
| Capacity | Nominal: 350 mAh Minimum: 343 mAh | 0.2C Standard discharge |
| Charge Voltage | Maximum: 4.2 ±0.03 V | By standard charge method |
| Charge current | Standard: 0.2C, 70mA | Charge time about 6 hours |
| | Max Continuous: 0.5C, 175 mA | Charge time about 3 hours |
| Discharge current | Standard: 0.2C, 70mA | Continuous charge mod |
| | Max Continuous: 1C, 350 mA | Continuous discharge mod |
| Discharge cut-off voltage | 3.0 V | 0.2C constant current discharge to 3.0V |
| Internal impedance | ≤ 130 mΩ | Internal resistance measured at AC 1KH after 50% charge |
| Dimension (Including shrink sleeve/label) | Diameter: 10.3 ±0.2mm; Height: 43.8 ±0.3mm | |
| Weight | 8 g (Approx) | |
| Operation temperature | Charge: 0~ 45 °C Discharge: - 20 ~ 60 °C | Charge at a very low temperature such as blew 0°C, will be get a lower capacity and reduce cycle life of the battery |
| Storage temperature | - 20 ~ 25 °C 60±25%R.H. | Do not storage exceed half year. Must charge once when storage for half year. Must charge the battery which with protect circuit when storage for three months. |

Testing environment

Unless otherwise specified, all tests stated in this document shall be performed at 20-25°C, 60±25%R.H.

Performance and test conditions

- Standard charge: 0.2C= 70 mA constant current (CC) charge to 4.2V, followed by 4.2V constant voltage (CV) charge until current taper to ≤0.01C
- Standard discharge: 0.2C= 70 mA CC discharge to the end of discharge voltage 3.0V

Cell Electrical characteristics

| No | Item | Test Method and Condition | Criteria |
|----|--|---|--|
| 1 | Rated Capacity at 1C(Min.) 0.2C | After standard charge, the capacity shall be measured on 0.2C discharge till the voltage discharge to 3.0V | 343mAh |
| 2 | Cycle Life | Charging and discharging battery as below conditions <ul style="list-style-type: none"> • 0.2C standard charge to 4.2V end-off • 0.2C standard discharge to 3.0V cut-off Continuous charge and discharge for 300 cycles, the capacity will be measured after the 300 cycle | ≥80% of initial capacity |
| 3 | Capacity retention | The battery to be charged in accordance with standard charge condition at 20~25°C, then storage the battery at an ambient temperature 20~25°C for 28 days. Measure the capacity after 30 days with 0.2C at 20~25°C as retention capacity | Retention capacity ≥85% |
| 4 | Temperature Dependence of discharge capacity | Cells shall be charged per 3.6 and discharged @0.2 C to 3V. Except to be discharged at temperatures per Table 3. Cells shall be stored for 3 hours at the test temperature prior to discharging and then shall be discharged at the test temperature. The capacity of a cell at each temperature shall be compared to the capacity achieved at 23°C and the percentage shall be calculated. | Each cell shall meet or exceed the requirements of Table 3 |

Table 3

| | | | | | |
|-------------------------|-------|-------|-----|------|------|
| Discharge Temperature | -20°C | -10°C | 0°C | 23°C | 60°C |
| Discharge Capacity 0.2C | 40% | 50% | 80% | 100% | 95% |

Mechanical characteristics

| No | Item | Test Method and Condition | Criteria |
|----|----------------|--|-----------------------------------|
| 1 | Free fall test | The battery to be fully charged in accordance with standard charge condition, then drop the battery three times from a height of 1.0 m onto a concrete floor. The batteries are dropped so as to obtain impacts in random orientations. | No Fire |
| 2 | Vibration test | After standard charging, fixed the cell to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes. | No explosion, No leakage, No fire |

Safety Performance

| No | Item | Test Method and Condition | Criteria |
|----|-----------------------|--|---|
| 1 | Thermal exposure test | Each fully charged cell, stabilized at room temperature, is placed in a circulating air-convection oven. The oven temperature is raised at a rate of 5°C /min ± 2 °C /min to temperature of 130°C ± 2 °C. The cell remains at this temperature for 10 min before the test is discontinued. | No explosion, No fire |
| 2 | Short test | The fully charged battery is to be short-circuited by connecting the positive and negative terminals of the battery with resistance load not exceed 100mΩ. Tests are to be | No explosion, No fire The Temperature of the Battery surface |



| | | | |
|---|-----------------------|--|---|
| | | conducted at room temperature 20~25°C. | not exceeded than 150°C |
| 3 | Short test | The fully charged battery is to be short-circuited by connecting the positive and negative terminals of the battery with resistance load not exceed 100mΩ. Tests are to be conducted at room temperature about 60-65°C | No explosion, No fire The Temperature of the Battery surface not exceeded than 150°C |
| 4 | Forced discharge test | A discharged cell is subjected to a reverse charge at 1C for 90 min. | No explosion, No fire |

Insulation

The top face (positive terminal) and side is covered with insulation tubing

Charge State of Battery before shipment

Approximately 30% charged

Cautions in Use

To ensure proper use of the battery please read the manual carefully before using it.

- Do not expose to, dispose of the battery in fire.
- Do not put the battery in a charger or equipment with wrong terminals connected.
- Avoid shorting the battery
- Avoid excessive physical shock or vibration.
- Do not disassemble or deform the battery.
- Do not immerse in water.
- Do not use the battery mixed with other different make, type, or model batteries.
- Keep out of the reach of children.
- Never use a modified or damaged charger.
- Do not leave battery in charger over 24 hours.
- Store the battery in a cool, dry and well-ventilated area.
- Regulations vary for different countries. Dispose of in accordance with local regulations.

Storage of the Batteries

The batteries should be stored at room temperature, charged to about 30% to 50% of capacity. We recommend that batteries be charged about once per half a year to prevent over discharge.

Other Chemical Reaction

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of



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the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

Please contact us when you need any help for custom battery packs and safety concerns

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