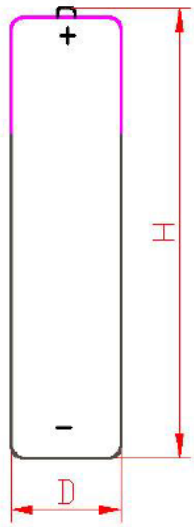
## Rechargeable Lithium AA battery

| Primary characteristics | | |
|---|---|---|
| **Parameter** | **Value** | **Unit** |
| Nominal voltage | 1.5 | V |
| Rated capacity | 1650 | mAh |


**Battery dimensions**




## Scope

The purpose of this product specification is to provide technical information for USB C rechargeable lithium AA batteries.
The test shall be conducted in strict accordance with the method specified in this specification.
If you have any objection to the test items or test methods, please contact Akyga Battery.

| Specification table | | |
|---|---|---|
| **Parameter** | **Value** | |
| Model | AA-USB | |
| Typical voltage | 1.5V | |
| Rated capacity | 1650mAh | |
| USB charging voltage | DC5.0 / USB input DC/5V±0.2 | |
| USB charging current | 380mA / USB input DC5V / >0.5A | |
| Standard charging time | 120min | |
| Fast charging time | 90min | |
| Discharging current | Standard: 200mA<br>(Max: 2000mA) | |
| Discharge time | Standard: 160min | |
| Discharge cut-off voltage | 0.9V | |
| Cycle life | 1000+ | |
| Operating temperature | -20~60°C | |
| Storage ambient temperature | -10~45°C | |
| Storage environment humidity | ≤85% | |
| Annual self-discharge rate | 10~15% | |
| Charging temperature rise | 16K | |
| Quiescent current | <8uA | |
| Led status: Green LED | Flashing at 1Hz during charging, keeping on at full charge, turning off when discharging, flashing at 10Hz at high speed when discharge short circuit | |
| Size | Diameter | 14.0 ±0.2 mm |
| | Height | 50.5 ±0.2 mm |
| Weight Approx | 17.6g | |

Notes:
Operating voltage: The battery is at 80% state of charge with a load of 0.5A.
Indicator status: The green LED indicator blinks when charging and the indicator keeps on when fully charged.
Cycle life: 1C standard charge and discharge use Recovery initial capacity ≥70% (Refers to the standard charge and discharge of battery cells).
Storage: -10~60℃≤30 days, -10~45℃≤90 days, -10~20℃≤360 days, and the recovery capacity is not less than 70% of the initial capacity.

**Product safety test and mechanical characteristics:**

| No. | Test item | Test method | Test requirements |
|---|---|---|---|
| 1 | Vibration test | At room temperature, place the 100% charged battery on the vibration platform and vibrate for 30 minutes according to the following parameters: Amplitude: 1.6(p-p) Frequency: 10-55Hz Directions: X,Y, Z | No rupture, no fire and no liquid leakage. |
| 2 | Short circuit | After the battery is fully charged, apply a short-circuit current of 500mA to the battery for 60 seconds. | No explosion, no fire |
| 3 | Heavy impact | After the battery is fully charged, place it on the impact table and drop freely from 0.61m height with a 10kg heavy hammer. | No explosion, no fire |
| 4 | Overcharge | At room temperature, the battery is discharged to 1.0V with 1C constant current, and then charged to 10V with 3C current, until the current approaches 0mA. | No explosion, no fire |
| 5 | Squeeze | Squeeze the battery when it is fully charged, clamp it between two metal plates and apply a force of 13KGF for 60 seconds | No explosion, no fire |
| 6 | High and low temperature | At room temperature, constant current and constant voltage 1C, 4.2V charging cutoff current 0.02C, respectively at -20℃\-10℃\0℃\25℃\60℃ (low temperature for 12h, high temperature for 2h), 0.5C discharge to 1.0V; Test the discharge capacity of the battery. | Discharge capacity ≥ initial capacity 70% |
| 7 | Charge retention rate Storage performance | The initial capacity of the battery was measured by standard charge and discharge conditions, and then the battery was stored at 25±5℃ for 28 days after standard charge, The residual capacity of the battery was tested at 1C discharge to termination voltage. Then, the recoverable capacity of the battery is tested according to the standard charging and discharging conditions. | Remaining capacity ≥initial capacity 85% Recovery capacity ≥ initial capacity 95% |
| 8 | Cell cycle test | Standard charge and discharge, cycle test, until the discharge capacity for two consecutive times is less than 70% of the initial capacity, that is, the cycle life is considered to be terminated. | More than 1000 times |
| 9 | Heat impact | The fully charged battery is heated in an oven with strong convection. The temperature of the oven rised from room temperature to 130±2℃ at a rate of 5±2℃/min, and kept constant at this temperature for 10 mins. | No explosion, no fire |
| 10 | Fall / drop off | Drop the 100% charged battery from a height of 1.0m to a hardwood board with a thickness of 18-20mm placed on the concrete floor, and drop freely once in each direction. | No rupture, no fire and no liquid leakage. |
| 11 | Plugging test | Insertion force ≥1kg, pull-out force ≤3.5kg, plug-in speed 12.7mm/min | >1000 times |
| 12 | Insulation withstand voltage test | Apply a high voltage of 1200V/min to the product with a leakage current of 0.5mA | No breakdown |

**Warranty period and product liability**

The warranty period is 12 months from the date of delivery. Our company shall not be responsible for any accident caused by failure to operate in accordance with the specifications. In case of any change in the specifications, the company will notify the buyers.

**Warnings and precautions when using the battery**
To prevent the battery from leaking, heating and explosion, please pay attention to the following preventive measures:
**Warning**:
1) Do not immerse the battery in seawater or water and it should be placed in a cool and dry environment when in idle.
2) Do not use and leave the battery beside hot and high temperature sources, such as fire and heater.
3) Do not reverse the positive and negative poles when using batteries.
4) Do not plug the battery into the power socket directly.
5) Do not throw the battery into the fire or heater.
6) Do not use metal to connect the positive and negative poles, in case of short circuit
7) Do not transport or store batteries together with metals such as hairpins and necklaces.
8) Do not knock or throw, trample on the batteries, etc.
9) Do not weld the battery and pierce the battery with nails or other sharp tools directly.
**Matters needing attention:**
1) Do not use or place the battery under high temperature (Under hot sun or in a hot car), otherwise it may cause the battery to overheat, malfunction or shorten its service life.
2) Do not use Batteries in places with strong static electricity and strong magnetic field, otherwise it will easily destroy the safety protection device and bring unsafe hidden dangers.
3) If the battery leaks and the electrolyte gets into your eyes, don't rub it, Rinse your eyes with water, and seek medical treatment immediately otherwise, your eyes will be hurt.
4) Remove the battery from the device or charfer immediately and stop using it if it gives off an odor heats up discolors disforms or appears any abnormality during use storage or charging.
5) If the electrode is dirty, wipe it with a dry cloth before use, otherwise it may lead to poor contact or functional failure; Waste batteries should be wrapped with insulating paper to prevent short circuit and high temperature and fire!

## Disclaimer

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