Gigatek Batteries Pvt Ltd.,

PRODUCT SPECIFICATION

Alkaline AA Size Battery

Model: AA LR6

Prepare	Review	Approval

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1. General Information

1.1 Scope

This specification is applicable to the door lock battery provided by Fujian Nanping Nanfu Battery Co., LTD.

1.2 Product Type: Smart door lock High drain application battery (alkaline)

1.3 Model: Smart Door lock No. 5 Battery LR6 AA

2. Reference Standard

2.1 National Standard for galvanic Cells /IEC

GB/T8897.1-2013/IEC60086-1:2015 Primary batteries-part 1: General
GB/T8897.2-2013/IEC60086-2:2015 Primary batteries-part 2: Physical and technologic specifications
GB8897.5-2013/IEC60086-5:2016 Primary batteries-part 5 Safety of batteries with aqueous electrolyte

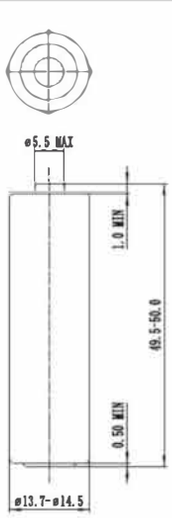
2.2 EU's battery directive

This product complies with EU's battery directive (2006/66EC)

Packaging materials comply with EU's directive on packaging materials and waste(94/62EC)

3. Specification

Nominal voltage	1.5Volt
Open circuit voltage	1.5+0.18-0 Volt
Gigatek door lock capacity Discharge mode: 10mA, 24h/d, 20℃, Cut-off voltage=0.8V	~3300mAh
Weight	~23.5 g
Storage temperature range	10℃~25℃, no more than 30℃
Working temperature rage	-20 ℃~ 50℃
Validity	5 years
Appearance	Visually check the appearance of the battery at least 30 cm away from the battery. The battery should be free of dents, scratches, rust or internal material outflow (such as sealer, etc.). The battery must be free from appearance defects that may affect the actual use or performance of the battery.



4. Product specifications and test methods

Unless otherwise stated, all product tests shall be performed at ambient temperature of 20±2℃ and relative humidity of (55±20) %.

All samples shall be stored in the above environment for at least 8 hours prior to testing.
Digital voltmeter (DCM) accuracy is 1mV (impedance ≥1MΩ)
The precision of the load resistance is ±0.5% of the specified value

4.1 Open circuit voltage and load voltage (load resistance 5, 0.3s)

Voltage	OCV (V)	CCV (V)
Initial	≥1.58	≥1.42
Store for 1 year	≥1.55	≥1.39

4.2 Discharge performance of door lock battery

Test condition: Ambient temperatur (20±° C) Relative humidity: (55±20) %								Decline rate		
Model	Application	Load	Discharge mode	End voltage (V)	Unit	Normal	MAD	1Year	3Years	5Years
LR6 AA	Smart door lock	750mA-0.2s/150mA-2.8s	3s/m, 60m/h, 24h/d	1.05	Pulse	7000	6000	12%	18%	24%
	Motor, Toy	3.9Ω	1h/d	0.8	h	8.7	8.2	8%	12%	16%
	Toy, non-motorized	250mA	1h/d	0.9	h	9.3	8.8	8%	12%	16%
	Digital camer	1.5W-2s/0.65W-28s	5m/h, 24h/d	1.05	Pulse	139	108	12%	18%	24%
	CD, digital audio, wireless gaming	100mA	1h/d	0.9	h	25.0	23.5	8%	12%	16%

5.Leakage resistance

5.1 Smart door lock new battery leakage resistance performance test

Model	New battery leakage resistance test			
LR6	Temperature and humidity	Test Method	Sample (Pcs)	Requirements
	(60±2)℃ RH(90±5)%	The batteries are stored for 60 days in a hot and humid oven.	20	No leakage

5.2 Smart door lock battery in the process of use (partial discharge) leakage resistance test

Model	Partial discharge leakage resistance test			
LR6	Temperature and humidity	Test Method	Sample (Pcs)	Requirements
	(20±2)℃ RH(55±20)%	Discharge the battery continuously for 7 hours with a 10Ω load resistor and leave the battery at room temperature for	9	No leakage

		60 days after discharge.		

5.3 Smart door lock battery used no electricity (over discharge) leakage resistance test

Model	Over-discharge leakage resistance test			
LR6	Temperature and humidity	Test Method	Sample (Pcs)	Requirements
	20±2℃ RH(55±20)%	Discharge continuously with a 43Ω load resistor to 0.6V, and leave the battery at room temperature for 60 days after discharge.	9	No leakage

6.Safety performance

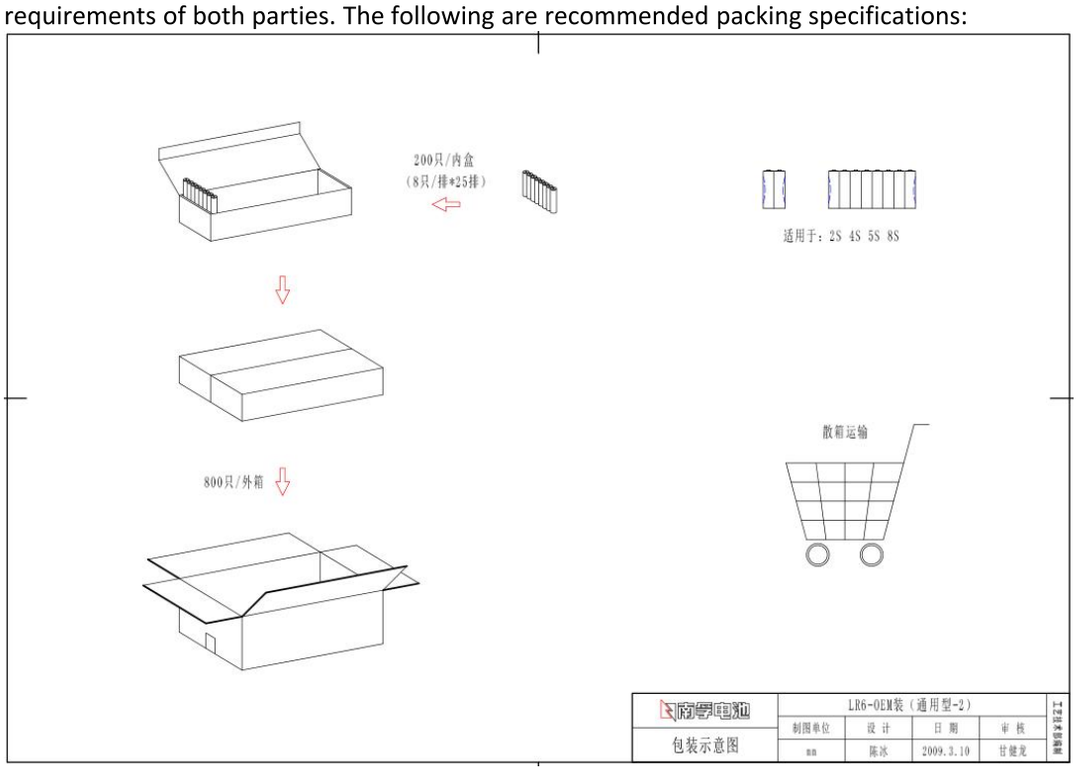
Test items	Condition	Pcs	Requirements
Free-drop	The uncharged battery was dropped from a height of 1 meter to the concrete ground. Each measured battery fell 6 times, and two times in each of the three axis directions. Then leave the battery for an hour.	5	non-ignition non-explosion
Short-circuit test	Use a circuit with a resistance of less than 0.1 ohms to connect the positive and negative terminals and discharge for 24 hours.	5	
Incorrect installation	Four uncharged batteries of the same brand, model and source are connected in series (the interconnected resistance in the circuit should not be greater than 0.1Ω). One of the batteries is connected in reverse and connected to the circuit for 24 hours or until the battery shell temperature drops to the ambient temperature.	20	
Temperature cycling	Temperature cycle steps: batteries in the inspection warehouse, will test within 30 min warehouse temperature rise to 70+5℃, and keep the temperature for 4 h, within 30 min will test the warehouse temperature dropped to 20 +/- 5℃, and keep the temperature for 2 h; within 30 min temperature dropped to the inspection room (+/- 5-20℃, and keep the temperature for 4 h, within 30 min temperature rise to the inspection room (20+5)℃, repeat the above steps to continue the other nine cycle;	5	non-ignition non-explosion

	After the 10th cycle, check after 7 days of storage.		

7. Safety instructions

7.1 Packing requirement

Battery packaging design, packaging form and packaging gage can be negotiated according to the requirements of both parties. The following are recommended packing specifications:



7.2 Display and storage

Batteries should be stored in a cool and dry place with good ventilation.
Battery boxes should not be stacked on top of each other (or should not exceed the specified height).
Batteries stored in warehouses or displayed in retail stores should not be exposed to direct sunlight or rain for long periods of time.
Do not mix the unpacked batteries together to avoid mechanical damage or mutual short circuit.
Do not keep the battery in an environment with a relative humidity of 75% or above.
Do not keep the battery in an environment where the temperature is 45℃ or above.

7.3 Transportation

When transporting batteries, pack them securely to prevent them from falling. Do not fold the packing case too high; otherwise, the bottom battery case will be crushed. Take protective measures against bad weather.

7.4 Disposal

Do not remove the battery;
Do not handle batteries with fire except in a controlled stove;
Cells can be disposed of as public waste, provided they do not violate local regulations.

Where there are regulations on recycling used batteries, the following matters should be considered:
a) Store collected waste batteries in non-conductive containers;
b) Store the collected waste batteries in a well-ventilated place. Because some used batteries have residual charge. These batteries can be short-circuited, charged or forced to discharge and release hydrogen gas. If the container and storage place for collecting batteries are poorly ventilated, hydrogen will condense and explode when it encounters fire.
c) Do not place collected batteries with other substances or materials, as some used batteries have residual charge and may be short-circuited, charged or forced to discharge. The resulting heat may ignite flammable waste such as tarpaulin, paper or wood and cause a fire.
d) Attention should be paid to protecting the extremes of waste batteries, especially those with high voltage, to prevent short circuit, charging and forced discharge. For example, insulation tape can be used to wrap the extremes of batteries.
e) Failure to follow these recommendations may result in battery leakage, fire, and/or explosion.

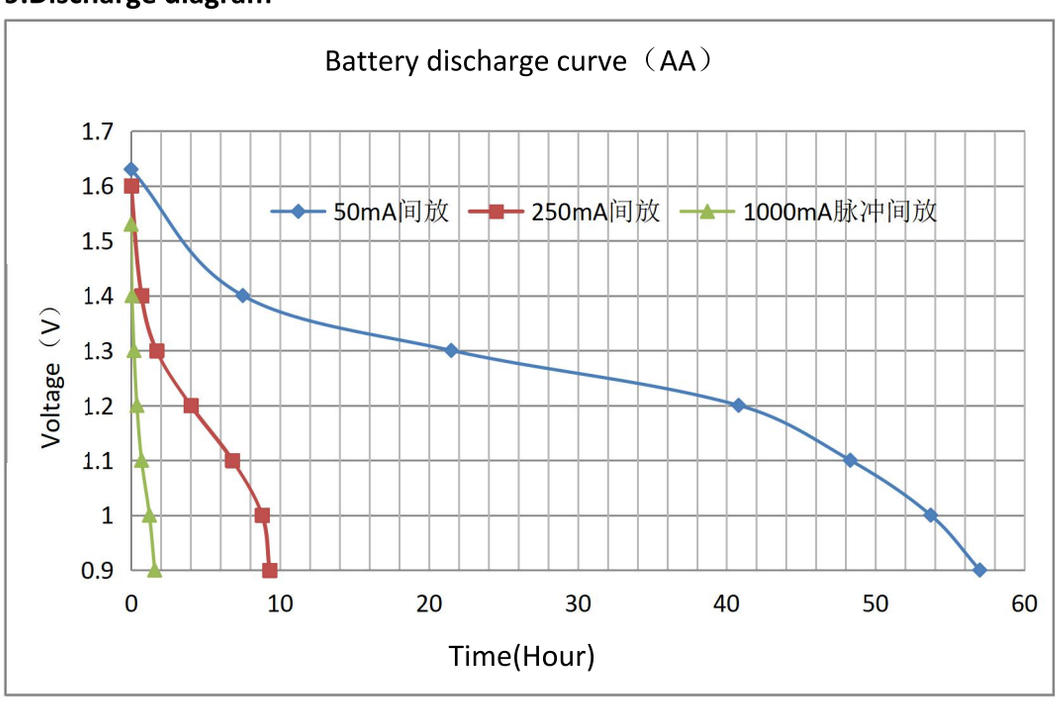
8. Heavy metal content

Mercury(Hg) content should be less than 1PPM

Cadmium(Cd) content should be less than 2PPM

Lead(Pb) content should be less than 15PPM

9.Discharge diagram



10.Remark

Please refer to GB/T 8897 series and IEC 60086 for any other matters not listed.