

Product Specification
Alkaline AA Size Battery
Non-Rechargeable

1. Scope

This specification is applicable to Zeus alkaline cell (No mercury and Cadmium added) supplied by Zeus Battery Products.

2. Law & Regulation Compliances

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

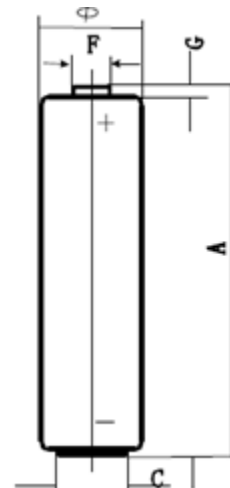
Packaging materials comply with EU's directive on packaging materials and waste (94/62/EC).

3. Specification

No.	Item	Specification	Remark
1	Type designation	IEC/JIS: LR6 ANSI: 15A Common: AA	
2	Chemical system	Zn/KOH-H ₂ /MnO ₂	
3	Nominal Voltage	1.5V	
4	Nominal Capacity	Approx. 3000mAh	10mA, 24h/d, 20°C, 0.8V cut-off voltage
5	Weight	Approx. 23.8g	
6	Operating temperature	-18 ~ 50°C	
7	Recommended storage temperature	Not to exceed 30°C	

4. Dimension (unit: mm)

/	Min	Max
Φ	14.0	14.5
A	49.9	50.4
C	9.0	9.4
F	5.2	5.5
G	1.2	1.9



5. Appearance

The battery visually inspected by unaided eye 30cm away from battery. The battery shall be free from dents, scratch, rust and extruded internal compounds such as sealing compounds, displacement of artwork and etc.

6. Electrical Characteristics

Unless otherwise stated, all measurements are to be performed at the following standard conditions:

20±2°C

55±20% Relative Humidity

All samples are to be normalized for 8 hours at least at the above environment prior to measurement.

The digital voltmeter is with the resolution of 1mV and internal resistance not less than 1MΩ.

The total load resistance of the circuit is within ±0.5% of the specified value.

6.1 Open circuit voltage and closed circuit voltage (Load resistance 3.9Ω, 0.3 seconds)

I		OCV(V)	CCV(V)	S.C.(A) (reference)
Initial	Min	1.57	1.45	10.0
	Normal	1.60	1.55	18.0
Stored 1 year	Min	1.56	1.40	7
	Normal	1.58	1.50	15

6.2 Service output

Load	10Ω	1000mA	1.5w/ 0.65w	1000 mA	3.3Ω	250mA	3.9Ω	100mA	24Ω	43Ω	
Test mode	24h/d	24h/d	2s/28s 5min/h	10s/m 1h/d	4m/h 8h/d	1h/d	1h/d	1h/d	15s/m 8h/d	4h/d	
End voltage	0.9V	0.9V	1.05V	0.9V	0.9V	0.9V	0.8V	0.9V	1.0V	0.9V	
Unit	h	m	pulse	pulse	m	h	h	h	h	h	
Applications	Reference	Reference	Digital still camera	Photo flash	Portable lighting	CD/ Electronic games	Motor/ toy	Digital audio	Remote control	Radio/ Clock	
Initial	MAD	19.5	52	90	500	320	7.5	7.5	21.5	44	91
	Normal	20.5	60	120	570	350	8.3	8.2	23.5	47	96
Stored 1 year	MAD	19.0	43	75	400	300	7.2	7.2	21.0	43	88
	Normal	20.0	55	100	550	330	7.8	7.8	22.5	45	93

m: minute h: hour d: day

Remark: 1) The initial discharge test shall commence within 30 days of manufacture. During stored period, the cells shall be stored under room temperature conditions.

2) Lot release service output test is conducted by 10Ω continuous discharging to 0.9volts

- The batteries shall not leak during the service life test before the end voltage reached.

MAD=Minimal Average Duration

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Rev. A

7. Leakage Resistance

7.1 Over discharge leakage test:

Test conditions: $20\pm 2^{\circ}\text{C}$ & R.H. $60\pm 15\%$, 10Ω continuous discharge for 48h.

Number of test samples: 9 batteries.

Requirement: No visible leakage or explosion.

7.2 High temperature leakage test

Test conditions: Store for 20 days under $60\pm 2^{\circ}\text{C}$, then store 4~24h under standard condition.

Number of test samples: 24 batteries.

Requirement: No visible leakage or explosion.

8. Safety Characteristics

8.1 User Drop Test

This test simulates the situation when a battery is accidentally dropped.

Test conditions: Undischarged test batteries shall be dropped from a height of 1 meter onto a concrete surface. Each test battery shall be dropped six times, twice in each of three axes. The test samples shall be stored for 1 h afterwards.

Number of test samples: 5 batteries.

Requirement: No explosion or leakage after 1 hour. OCV rate is over 95%.

8.2 Short-circuit and explosion-proof characteristics

This test simulates an external short circuit of a battery during daily handling of batteries.

Test conditions: Positive and negative terminals of an undischarged battery shall be connected directly. The circuit shall be completed for 24h or until the battery case temperature has returned to ambient temperature. The resistance of the inter-connecting circuitry shall not exceed 0.1Ω .

Number of test samples: 5 batteries

Requirement: No fire or explosion; Leakage is permitted.

8.3 Incorrect installation

This test simulate incorrect installation of a battery in series application.

Test conditions: 4 undischarged batteries are used per test. 3 batteries are placed correctly in series; the 4th battery is reversed with respect to polarity. The circuit is maintained until venting occurs or the reversed battery temperature has returned to ambient.

Number of test sets: 5 sets (20 batteries).

Requirement: No fire or explosion; Leakage is permitted.

9. Discharge Diagram

