



# LR14 ALKALINE DRY BATTERY TECHNOLOGY SPECIFICATION

Customer confirmation	Checked	
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	Corporate name :	
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## **1. SCOPE**

This specification defines the technical requirements for LR14 Alkaline cells.

## **2. REFERENCE DOCUMENTS**

GB8897.1-2003(IEC 60086-1:2000, IDT) Primary batteries-Part1: General.

GB8897.2-2005(IEC 60086-2:2001, MOD) Primary batteries-Part 2: Physical and Technological Specifications.

GB8897.5-2006(IEC 60086-5:2005, MOD) Primary batteries-Part 5: Safety of batteries with aqueous electrolyte.

## **3. CHEMICAL SYSTEM, VOLTAGES AND DESCRIPTION**

3.1 Chemical system: Alkaline manganese battery:

Alkaline electrolyte-zinc-manganese dioxide(mercury&cadmium free)

3.2 Nominal voltage: 1.5V

3.3 Description

IEC: LR14

JIS : AM-2

ANSI : C

## 4. NOMINAL AVERAGE BATTERY WEIGHT AND CAPACITANCE

### 4.1 Battery Weight:

$62 \pm 3\text{g}$  ( Avg)

### 4.2 Capacitance:

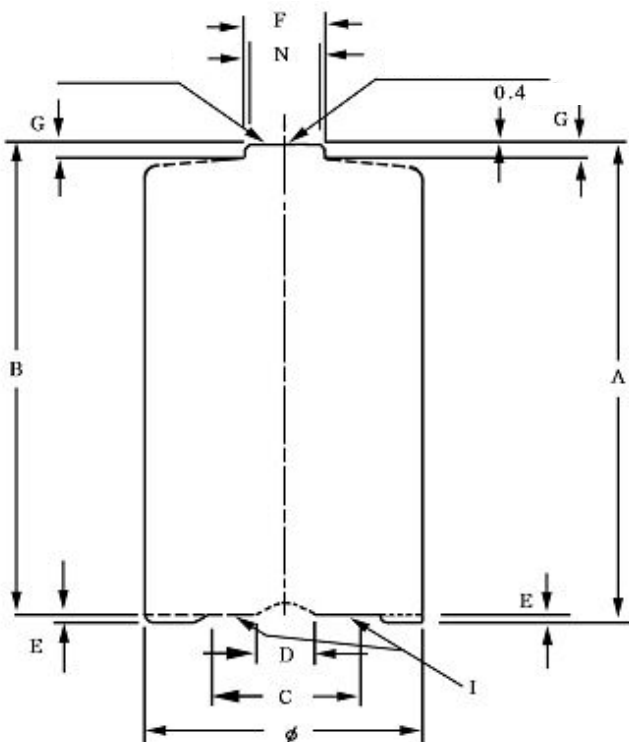
7000mAh(25mA,4hrs/d, 20°C, 0.8V CUT OFF)

## 5. HEAVY METAL CONTENTS (2006/66/EC)

Hg Content :  $\leq 1\text{ppm}$ , Cd Content:  $\leq 10\text{ppm}$  , Pb Content:  $\leq 40\text{ppm}$

## 6. LR14 BATTERY DIMENSIONS

The batteries meet dimensions of the attached drawing :



Unit : MM		
SIZE	R14	
Measure No	Max	Min
A	50.0	
B		48.6
C		13.0
E	0.9	
F	7.5	
G		1.5
Ø	26.2	24.9

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## 7. STORAGE CHARACTERISTICS

- (1) After 12 Months Storage At  $20 \pm 2^\circ\text{C}$ , 93% Capacitance Of Fresh Cells
- (2) After 24 Months Storage At  $20 \pm 2^\circ\text{C}$ , 83% Capacitance Of Fresh Cells
- (3) After 36 Months Storage At  $20 \pm 2^\circ\text{C}$ , 79% Capacitance Of Fresh Cells
- (4) After 48 Months Storage At  $20 \pm 2^\circ\text{C}$ , 76% Capacitance Of Fresh Cells
- (5) After 60 Months Storage At  $20 \pm 2^\circ\text{C}$ , 72% Capacitance Of Fresh Cells

## 8. ELECTRICAL CHARACTERISTICS[ $3.9 \Omega$ (PRECISION $\pm 0.5\%$ ), 0.3S, $20 \pm 2^\circ\text{C}$ ]

	OCV(V)	CCV(V)	SHORT-CIRCUIT CURRENT(A)
Initial	1.59	1.52	$\geq 10.0$
After 12 Months	1.56	1.45	7.5

OCV measurement: The inner resistance of Voltage Meter is above  $1\text{M} \Omega$

CCV measurement: After  $0.2 \pm 0.01$  second by  $R=2.2 \Omega$ .

SCC measurement:  $\pm 0.5\%$

## 9. DISCHARGE CAPACITY(SAMPLES: 9PCS, $20 \pm 2^\circ\text{C}$ , RH:45%-75%)

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Load	3.9 Ω	20 Ω	6.8 Ω	3.9 Ω
Discharge Mode	4min/h,8h/d	4h/d	1h/d	1h/d
End Voltage	0.9V	0.9V	0.9V	0.8V
Average Duration(Initial)	980mins	106h	33.5h	19.3h
IEC	770mins	77h	/	12h

- (1) The word “initial” is applicable to the products elapsed one month or less after production, including those, to which tests have been started in less than two months after production.

## 10. LEAKAGE RESISTANCE CHARACTERISTICS

### (1) Over Discharge Leakage Test

	Test Conditions	Sample Size	Test Method	Requirement	Criterion
Over Discharge	20 ± 2 °C, RH:60±15%	9PCS 9	3.9 Ω Continues Discharge 48h 3.9 Ω	No Visible Leakage and Overall Height: No Higher than Max Height(50.0)0.2m	0/9

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## (2) High Temperature Leakage Test

	Test Conditions	Sample Size	Test Method	Requirement	Criterion
High Temperature	60 ± 2 °C , RH:90±5%	40PCS 40 节	Store 20 days under test conditions, then store 4~24 hrs under 20 ± 2 °C , Rh 60±15%.	No Visible Leakage And Overall Height No Height Than Max Height 0.2mm	0/40

## (3) 45°C Dry Storage

	Test Conditions	Sample Size	Requirement	Acceptance
45°C Dry Storage	Stored For 8 Weeks At 45°C	20PCS	No Leakage	Ac=0, Re=1

## 11. SECURITY CHARACTERISTICS

### (1) Short Circuit Explosion-Proof Characteristics

	Test Conditions	Sample Size	Test Method	Requirements	Criterion
Short Circuit Explosion-Proof	20 ± 2 °C , RH:60±15%	10PCS	24 hr short-circuit under test conditions	Negative Terminal No Departure From Battery Body	0/10

### (2) Recharge Explosion-Proof Characteristics

	Test Conditions	Sample Size	Test Method	Requirement	Criterion
Recharge Explosion-Proof	20 ± 2 °C , RH:60±15% 20±2°C,	10PCS 10 节	Recharge 24h With 400mA Current	Negative Terminal No Departure From Battery Body	0/10

## 12.SAFETY REQUIREMENT

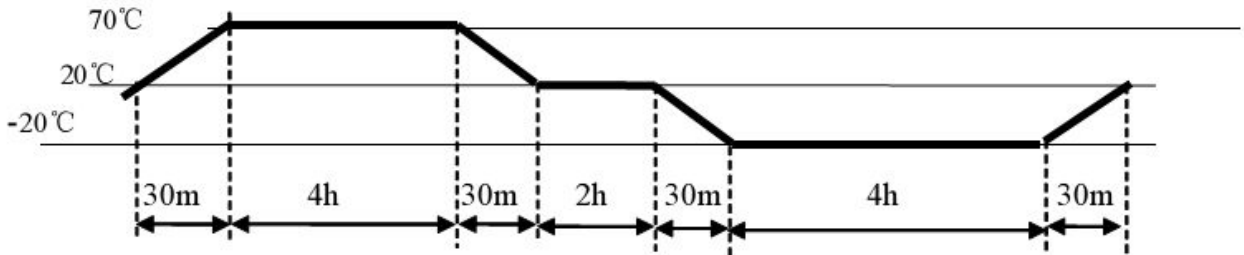
	Test Conditions	Sample	Requirement	Acceptance
Partial Use	Stored at $45 \pm 2 \text{ }^{\circ}\text{C}$ for 30 days after undischarged batteries were test discharged $3.9 \Omega$ 24h/d, EPV=1.0V.	5PCS	No leakage; No explosion	Ac=0 , Re=1
Thermal Shock	See the following note1, Total 10 cycles.	5PCS	No explosion	Ac=0 , Re=1
Incorrect Installation	Place three undischarged and unconditioned batteries in a series with one test sample battery reversed; complete the circuit until vent activation or until the temperature of the reversed battery returns to ambient.	5pcs	No explosion	Ac=0 , Re=1



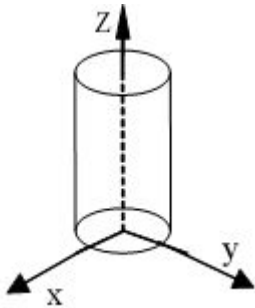
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	Test Conditions	Sample	Requirement	Acceptance
Free Fall	Drop each undischarged battery two times, oriented in each of three mutually perpendicular face(six total)from a height 1 meter, onto a concrete surface, see the following note2	5PCS	No explosion	Ac=0 Re=1
Over discharge	Discharge one test sample batter(C1)with 43 $\Omega$ resistance load until EPV is 0.6V, connect three undischarged batteries and the sample battery in series with a 20 $\Omega$ resistance load (R1)as shown in note3, maintain the circuit until the CCV of the series string reaches 2.4V	5PCS	No explosion	Ac=0 Re=1

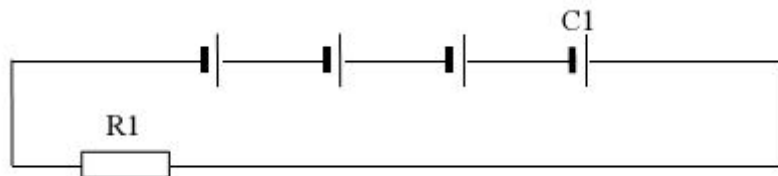
Note1: Thermal Shock



Note 2: Free Fall



Note3: Overcharge



### 13. INSPECTION RULES

14.1 Deliver inspection: Depending on GB2828

Number	Test	Item	IL	AQL
1	Dimensions	5	S-2	0.4
2	Appearance	-	II	1.0
3	Service Output	7	-	-
4	Open-circuit Voltage	6	II	1.0

Routine inspection: Depending on GB2829

The logo for ERGOLUX, featuring the brand name in a bold, white, sans-serif font with a registered trademark symbol (®) at the end, set against a solid black rectangular background.

#### **14. INSTRUCTION FOR USE**

- 14.1 Always select correct size and grade of battery most suitable for intended use.
- 14.2 Replace all batteries of a set at the same time
- 14.3 Clean the battery contacts and also those of the equipment prior to battery installation
- 14.4 Ensure that batteries are installed correctly with regard polarity (+ and -)
- 14.5 Remove batteries from equipment which is not be used for an extend period of time
- 14.6 Remove exhausted batteries promptly

#### **15. DISPLAY AND STORAGE**

- 15.1 Battery shall be stored in well-ventilated dry and cool conditions
- 15.2 Battery cartons should not be piled up in several layers, or should not exceed a specified height.
- 15.3 Batteries should not be exposed to direct sun ray for a long time or placed in areas where they get wet by rain
- 15.4 Do not mix unpacked batteries so as to avoid mechanical damage and / or short circuit among each other

#### **16. EXPIRY PERIOD:5 YEARS**

-----**(END)**