



## 6LR61 ALKALINE DRY BATTERY TECHNOLOGY SPECIFICATION

Customer confirmation	Checked	
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## **1. SCOPE**

This specification defines the technical requirements for 6LR61 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: 9V

3.3 Description

IEC: 6LR61

JIS : 6LR61

JIS : 6LR61

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## 4. NOMINAL AVERAGE BATTERY WEIGHT AND CAPACITANCE

### 4.1 Battery Weight :

$45 \pm 2\text{g}$  ( Avg)

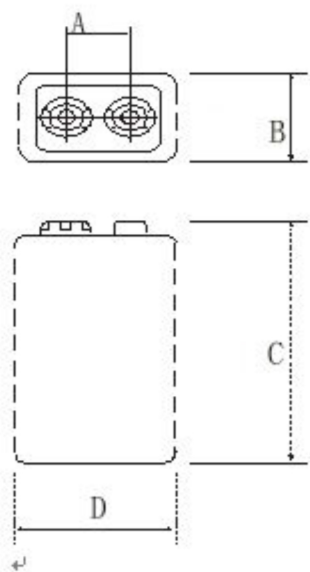
### 4.2 Capacitance: 1100mAh

## 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. 6LR61 BATTERY DIMENSIONS

The batteries meet dimensions of the attached drawing



Unit : MM		
SIZE	6R61	
Measure No	Max	Min
A	13.0	12.5
B	17.5	15.5
C	48.5	46.5
D	26.5	24.5



## 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[ $180\ \Omega$ (PRECISION $\pm 0.5\%$ ), 0.3S, $20 \pm 2^{\circ}\text{C}$ ]

	OCV(V)	CCV(V)	SHORT-CIRCUIT CURRENT(A)
Initial	9.5	9.3	4
After 12 Months	9.4	9.2	3

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%)

Load	270 $\Omega$	620 $\Omega$
Discharge Mode	1h/d	2h/day
End Voltage	5.4V	5.4V
Average Duration(Initial)	18h	41h
IEC	12h	33h

(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 $\pm$ 2 $^{\circ}$ C , RH:60 $\pm$ 15%	9PCS	180 $\Omega$ Continues Discharge 48h	No Visible Leakage and Overall Height: No Higher than Max Height(48.5)0.2m	0/9



## (2) High Temperature Leakage Test

	Test Conditions	Sample Size	Test Method	Requirement	Criterion
High Temperature	$60 \pm 2^{\circ}\text{C}$ , RH:90±5%	40PCS	store 20 days under test conditions, then store 4~24 hrs under $20 \pm 2^{\circ}\text{C}$ , rh 60±15%.	No Visible Leakage And Overall Height No Height Than Max Height0.2mm	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 $\pm$ 2 $^{\circ}$ C , RH:60 $\pm$ 15%	10PCS	24HR 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 $\pm$ 2 $^{\circ}$ C , RH:60 $\pm$ 15%	10PCS	Recharge 24h With 400mA Current	Negative Terminal No Departure From Battery Body	0/10

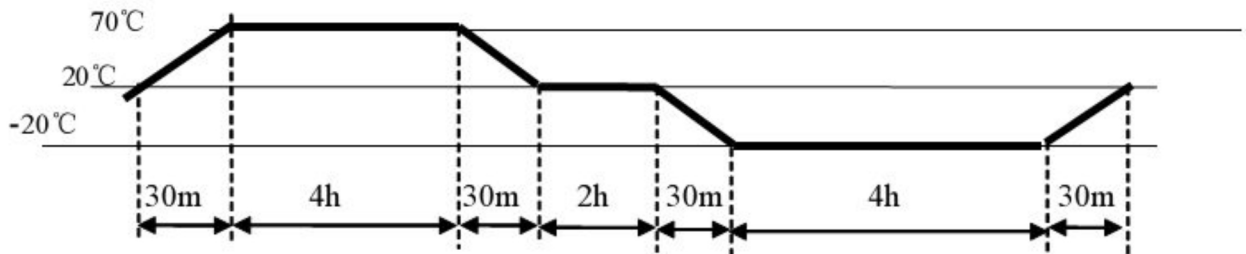
## 12.SAFETY REQUIREMENT

	Test Conditions	Sample	Requirement	Acceptance
Partial Use	Stored at $45 \pm 2$ °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. Note1 1*	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

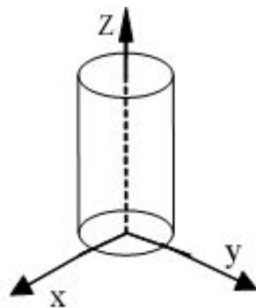


	Test Conditions	Sample	Requirement	Acceptance
Free Fall	Drop each undischarged battery two times, oriented in each of three mutually perpendicular face(six total)from a height 1 meter, onto a concrete surface, see the following note2	5PCS	No explosion	Ac=0 Re=1
Over discharge	Discharge one test sample 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

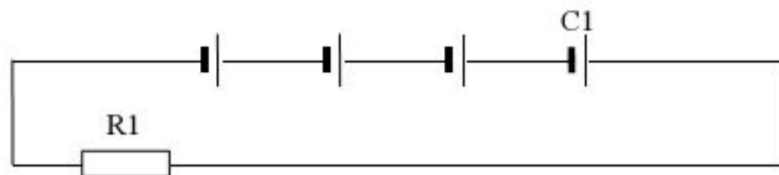
Note1: Thermal Shock



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



#### **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)**