

Energizer

SPECIFICATION for

Alkaline battery

Battery Model	6LR61
Edition	A0
Pages	9
Issue date	Oct 08, 2008

1. Scope

This specification is applicable to alkaline cell 6LR61 (No mercury and Cadmium added)

2. Law & Regulation Compliances

This product complies with EU's RoHS directive (2002/95/EC) and relative battery directives. Packaging materials comply with EU's directive on packaging materials and waste (94/62/EC)

3. General

3.1 Type designation

IEC/JIS 6LR61

ANSI 1064A

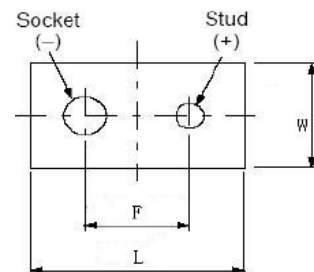
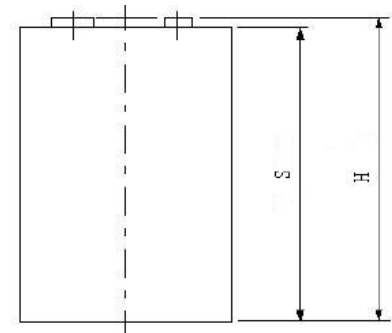
3.2 Chemical system: Zn/KOH-H₂O/MnO₂

3.3 Nominal voltage: 9.0V

3.4 Weight: Approximate 47g

3.5 Dimension (mm)

/	min	max
H	46.5	48.5
S	-	46.4
F	12.45	12.95
L	24.5	26.5
W	15.5	17.5



3.6 Capacity: Approximate 500mAh (35mA, 24h/d, 20°C, e.v.=0.8V)

4. Appearance

Shall not be observed any major scratches, stains, deformation, crack, corrosion, creeping and leakage that may adversely affect actual use or performance of batteries.

5. Electrical Characteristics

Unless otherwise stated, all measurements are to be performed at a Standard Environment of (20±2°C, 60±15% RH)

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

The digital voltmeter (DCM) is with the precision of 1mV (internal resistance not less than 1 MΩ). The load

resistance of the total circuit is accurate within $\pm 0.5\%$ of the specified value.

5.1 Open circuit voltage and closed circuit voltage (Load resistance 1.0 Ω , 0.3s)

/	OCV(V)	CCV(V)	AQL
Initial	9.3	8.0	0.65%
After 1 year	9.2	7.8	0.65%

5.2 Service output

Load		35mA	180 Ω	270 Ω	620 Ω
Test mode		24h/d	30m/d	1h/d	2h/d
end voltage		5.4V	4.8V	5.4V	5.4V
Initial	MAD	13.5 h	11.0 h	17.5 h	41 h
	Normal	14.3 h	13.1 h	19.5 h	43 h
After 1 year	MAD	11.0 h	10.0 h	16.0 h	39 h
	Normal	13.0 h	12.0 h	18.1 h	41 h

m: minute h: hour d: day

* The initial discharge test shall commence within 30 days of manufacture. In the storage period, the cells shall be stored under room temperature conditions

6. Leakage Resistance

6.1 Over discharge leakage test

Samples: 9 pcs

Test conditions: 20 \pm 2 $^{\circ}$ C, RH 60 \pm 15%, 20 Ω continuous discharge 48h

Requirement: no visible leakage and overall height no higher 0.2mm than max height

Criteria: 0/9

6.2 High temperature leakage test

Samples: 60 pcs

Test conditions: store 20 days under 60 \pm 2 $^{\circ}$ C, RH 90 \pm 5%, then store 4~24h under 20 \pm 2 $^{\circ}$ C, RH 60 \pm 15%

Requirement: no visible leakage and overall height no higher 0.2mm than max height

Criteria: 0/9

7. Security Characteristics

7.1 Short-circuit explosion-proof characteristics

Samples: 10pcs

Test conditions: 24h short-circuit under 20 \pm 2 $^{\circ}$ C, RH 60 \pm 15%

Requirement: No fire and no explosion; Leakage is allowed

Criteria: 0/10

7.2 Recharge explosion-proof characteristics

Samples: 10 pcs

Test conditions: 20±2°C, RH 60±15%, recharge 24h with 400mA current

Requirement: No fire and no explosion; Leakage is allowable

Criteria: 0/10

8. Expiry Date

5 years

9. Expiry Date Marking

9.1 Unless otherwise specified, each battery will carry a manufacturing date code followed by month and year of manufacturing for domestic and manufacturing datecode followed by month and year of expiry for export (shelf life 5 years)

9.2 For private label, can mark according to customer's requirement

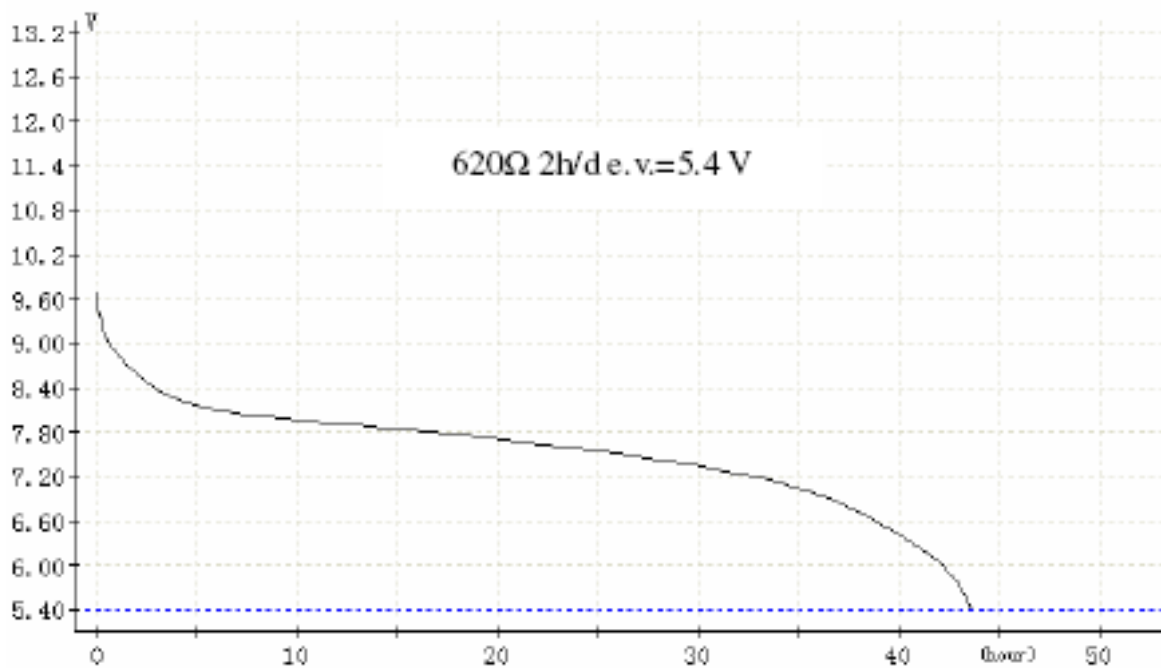
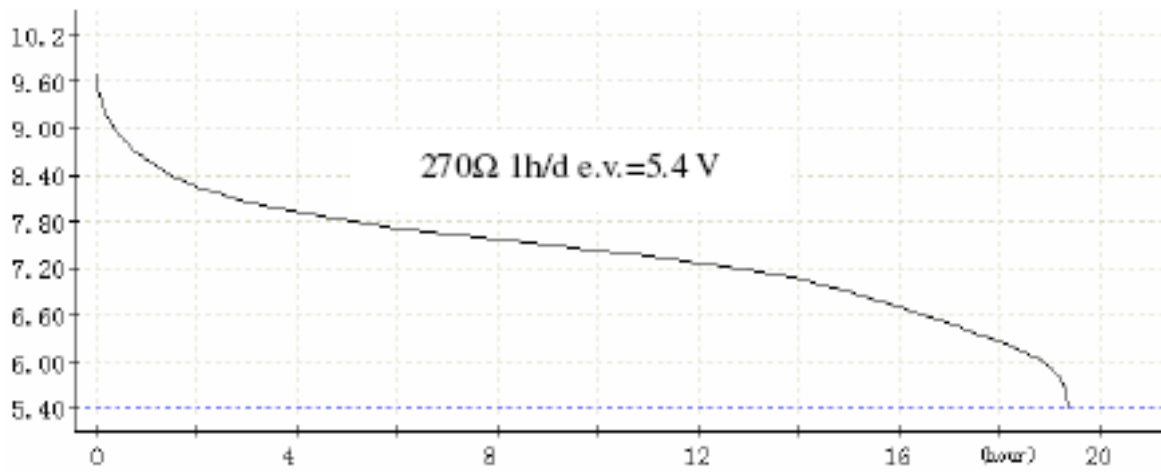
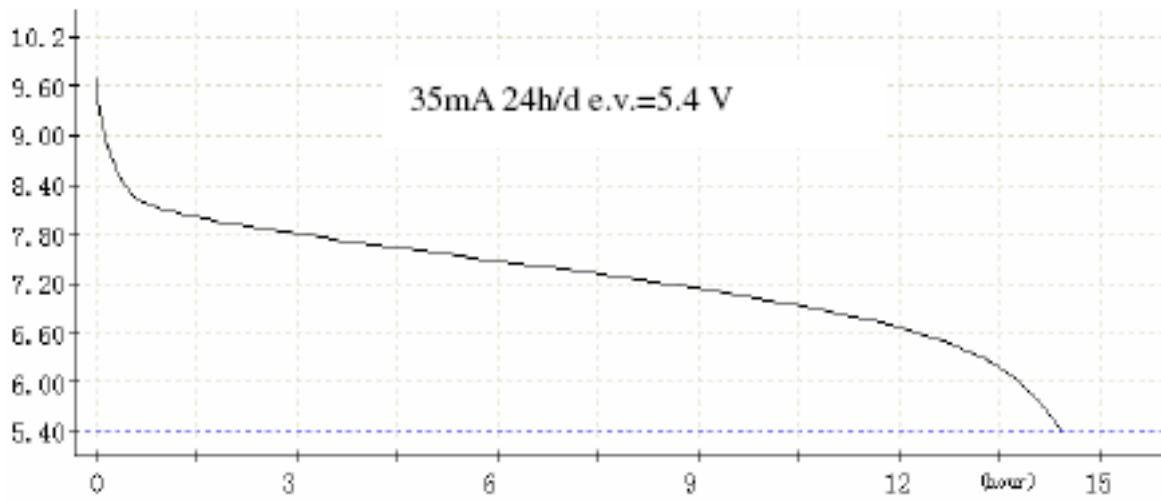
10. Packaging Requirement

The total of heavy metal lead, cadmium and hexavalent chromium concentration shall not exceed 100ppm in Packaging materials and printing inks. Ozone depleting substances (ODS) shall not be used in the manufacturing of any packaging.

The printing on each cell label is legible and permanent. Label defects, if any, shall conform to mutually agreed upon limit samples

Typical characteristic curve:

Chart 1. Discharge diagram



11. Material Safety Data Sheet

11.1 Composition / Information on Ingredients:

Chemical Nature: Alkaline zinc-manganese dioxide batteries

MATERIALS	APPROXIMATE PERCENT OF TOTAL WEIGHT (%)	MATERIALS	APPROXIMATE PERCENT OF TOTAL WEIGHT (%)
Manganese Dioxide (MnO ₂)	29.0	Cd	<0.0003
Zinc Powder (Zn)	10.0	Hexavalent Chromium (Cr ⁶⁺)	<0.0003
Potassium Hydroxide (40%)	15.0	Polybrominated Biphenyls (PBBs)	N/A
Hg	<0.0001	Polybrominated Diphenyl Ethers (PBDEs)	N/A
Pb	<0.0030	-	-

11.2 Hazards identifications

General advice: The common known rules for handling of chemicals should be obeyed. These chemicals are contained in a sealed steel can. For consumer use, adequate hazard warnings are printed on both the package and the battery. Potential for exposure should not exist unless the battery leaks, is exposed to high temperatures or is mechanically or electrically abused. Concentrated potassium hydroxide contained is caustic. Anticipated potential leakage of potassium hydroxide is 2-20 ml, depending on battery size. Do not eat and drink batteries. Keep batteries away from small children.

Physical-Chemical Hazards: This preparation is not classified as dangerous according to the criteria of directive 99/45/EEC

Hazards to man: It battery leaking, exposure to caustic ingredients may occur. Therefore, may cause sensitization by skin contact

Hazards to environment: N.A.

11.3 First-aid measures

Inhalation: In case of excessive inhalation due to leaking batteries remove to fresh air. Obtain medical advice

Skin Contact: If exposed to a leaking battery, remove contaminated clothing. Wash exposed areas with plenty of water and soap. If irritation occurs, consult a physician

Eye contact: If a battery is leaking and materials contact eyes, flush immediately with running water for at least 15 minutes. Consult an ophthalmologist at once

Ingestion: Not anticipated due to size of batteries. Choking may occur with the smaller size batteries. If exposed to a leaking battery, rinse mouth and surrounding areas with running water for at least 15 minutes. Give plenty of water to drink. Do not induce vomiting. Obtain medical advice

11.4 Fire-fighting measures

Suitable extinguishing media: Carbon dioxide (CO₂), foam, dry chemical powder

Extinguishing media not to be used: Never use a direct water jet

Exposure hazards from combustion products: In case of fire, carbon dioxide, carbon monoxide and other toxic organic substances will be generated. Do not inhale

fumes and smoke

Personal protective equipment: Wear full protective clothing. Use self-contained breathing apparatus

11.5 Accidental release measures

Personal precautions: Notify safety personnel of large spills. Caustic potassium hydroxide may be released from leaking or ruptured batteries. Avoid eye or skin contact and inhalation of vapours. Increase the ventilation. Wear protective clothing. Keep unprotected persons away

Environmental precautions: Avoid discharge and penetration into sewerage systems, waterways, pits, and cellars

Methods for cleaning up: Collect spilled material with an inert standard absorbent like sand or silica. Care for well-ventilated conditions. Recycle or dispose of the materials in an appropriate way

11.6 Handling and storage

General handling: Obey the common known rules and precautions for handling with chemicals. Avoid mechanical and electrical abuse. Do not short battery or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries according to equipment instructions. Do not mix battery systems, such as alkaline and zinc-carbon. Replace all batteries in equipment at the same time. Do not carry batteries loose in pocket or bag. Do not remove battery labels.

Storage: Store product in well-filled, appropriate coated and tightly closed containers avoiding influence of oxygen/air, light and humidity. Storage at room temperature

11.7 Exposure controls and personal protection

Exposure/Technical measures: Atmospheric vapor concentrations must be minimized by adequate ventilation

Protection of hands, eyes and skin: None required under normal use conditions. When handling leaking batteries, use neoprene, rubber or nitrile gloves and wear safety glasses to protect hands, eyes and skin

General safety and hygiene measures: Use only as directed

11.8 Physical and chemical properties

Physical state: Stainless steel top battery color; content dark and gray in color

Odour: N.A

Melting point: N.A

Boiling point: N.A

Flash point: N.A

Explosion limit: Not available

Ignition temperature: Not available

Vapor pressure: Not available

Specific gravity: N.A

Solubility in water: N.A

Solubility in other solvents: N.A

PH value: Not available

Partition coefficient: Not available

Viscosity: Not available

11.9 Stability and Reactivity

Thermal decomposition: Batteries may burst and release hazardous decomposition products when exposed to fire

Substances to avoid: Strong oxidation agents

Hazardous reactions: Contents incompatible with strong oxidizing agents

Hazardous decomposition products: Thermal degradation may produce hazardous fumes of zinc and manganese; hydrogen gas; caustic vapours of potassium hydroxide and other toxic by-products

11.10 Toxicological information

Toxicity information is available on the battery ingredients noted in Section 2, but in general, N.A to intact batteries.

Chronic health effects: N.A

11.11 Ecological information

Not available

11.12 Disposable considerations

Products: Dispose in accordance with appropriate regulations. If in doubt, contact your local government office concerned for information. Do not incinerate, since batteries may explode at excessive temperatures

11.13 Transport Information

Road (ADR/RID): Not regulated

Air (ICAO/IATA): Not regulated

Sea (IMDG): Not regulated

These batteries are not regulated by international agencies as hazardous materials or dangerous goods when shipped. A shipping name of "Alkaline Batteries – Non-hazardous" may be used on all domestic and international bills of lading.

11.14 Regulatory Information

Symbol: N/A

EC labeling: None

Risk phrases: None

Safety phrases: None

Labeling is not required because alkaline batteries are classified as "articles" under the Dangerous Preparations Directive and as such are exempt from the requirements of the Directive

11.15 Other information

The information on this Material Safety Data Sheet (MSDS) was obtained from current and reputable

sources. However, the data is provided without any warranty; expressed or implied, regarding its correctness or accuracy. It is the user's responsibility to assume liability on loss, injury, damage, or expense resulting from improper use of this product. Any previous MSDS of this product mentioned above are hereby replaced with this new document. We urge you to make this information available as appropriate in your organization and to any others with whom you arrange to handle this product.