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TECHNICAL SPECIFICATION

FOR

MAXIMUM POWER ALKALINE BATTERY

D-LR20-Alkaline-901

PROMULGATE DATE: November, 2021

SPEC. No.: TS-AlZnMn-901

The Manufacturer reserves the right to modify product specification and data stated herein without any prior notice and the right to finally interpret this technical specification.

1. Scope

This specification defines the technical requirements for LR20 alkaline battery.

Cross Reference:	Allmax	IEC	GB	JIS	ANSI	Common
	901	LR20	LR20	AM-1	13A	D

2. Purpose

To assure that any Allmax Maximum Power Alkaline LR20 battery will meet and exceed our customers' expectation.

3. Normative Reference

IEC 60086-1: 2021 *Primary Batteries—Part 1: General*

IEC 60086-2: 2021 *Primary Batteries—Part 2: Physical and Electrical Specifications*

IEC 60086-5: 2021 *Primary Batteries—Part 5: Safety of batteries with aqueous electrolyte*

GB 24427-2021 *Content limitation of mercury, cadmium and lead for zinc anode primary battery*

4. Fundamental Parameter

Item	Data
Item NO.	901
Chemical System	Alkaline Zinc-Manganese Dioxide (Potassium hydroxide electrolyte)
Primary Component	Zinc, Manganese dioxide, Graphite, Potassium hydroxide
Nominal Voltage	1.5 volt
Average Weight	143.0 g

Item	Data
Jacket	Aluminum Foil Jacket
Nominal Capacity	17000 mAh [a]
Hazardous Material Content [b]	Hg≤1 ppm, Cd≤10 ppm, Pb≤40 ppm
Packing	2 batteries/blister card [c]

Note:

a) Discharge condition: 10 Ω 4 h/d, end point voltage 0.8V at 20±2 ℃.

b) No Hg, Cd or Pb is added in the products during manufacturing.

c) We can make various kinds of packages as per the customers' request.

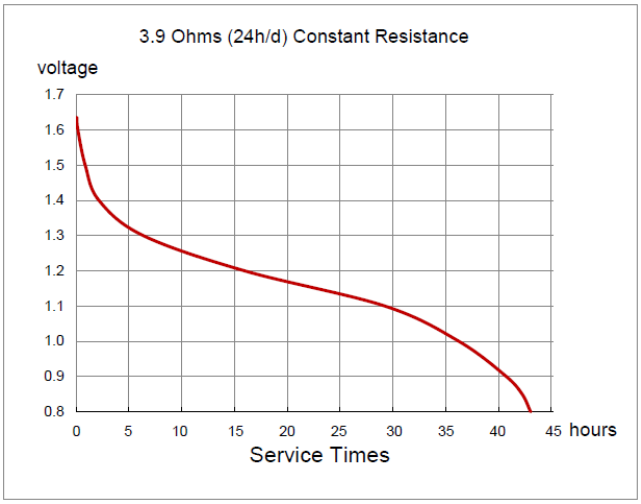
5. Electrical Characteristics

/	Off-load Voltage	Short Circuit Current	Acceptance Standard
Initial [a]	1.60 ~ 1.65 V	≥ 10 A	GB/T 2828.1-2012 commonly Ⅰ sampling AQL=0.4
After 12 months	1.56 ~ 1.65 V	≥ 8 A	

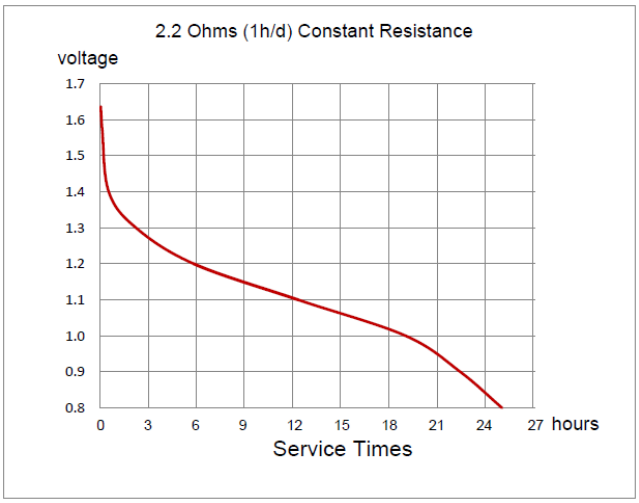
Note:

a) Initial means that within 60 days after manufacture date, at temperature 20±2 ℃, with relative humidity of (55±20)%.

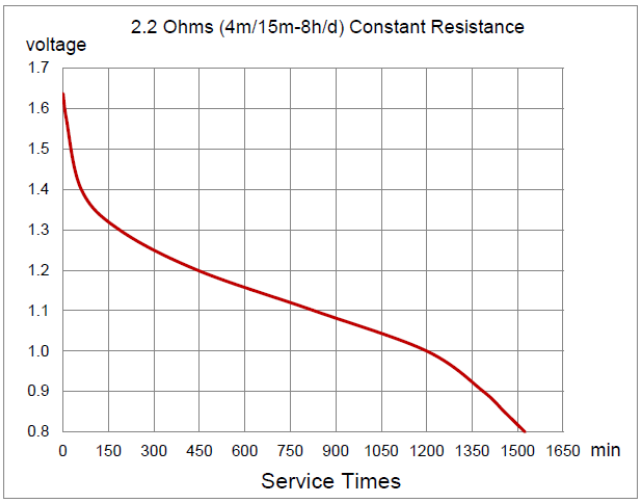
6. Service Time



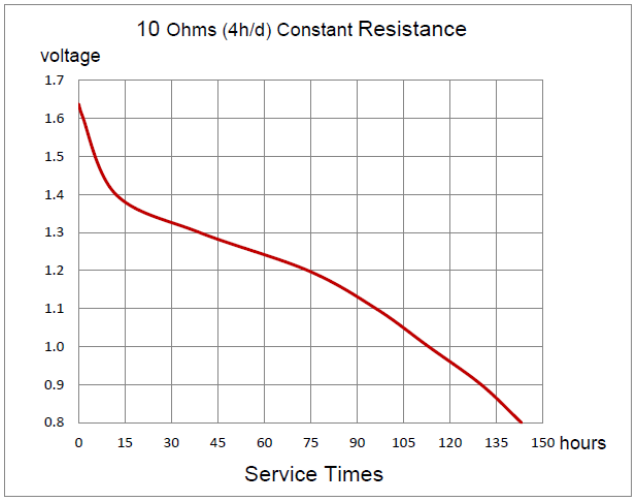
Application: Service Output Test



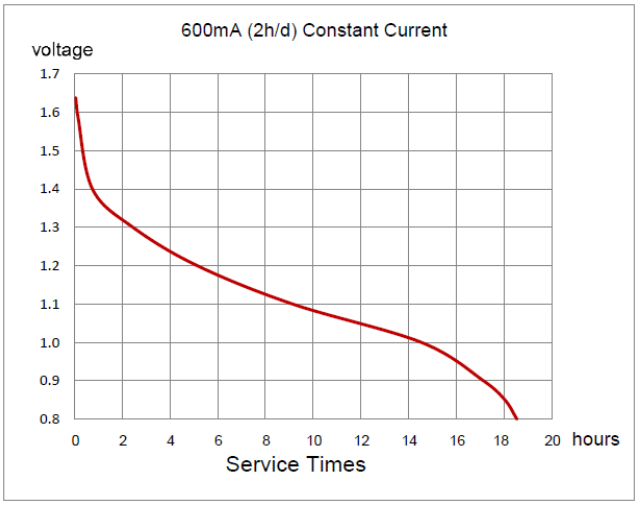
Application: Toy



Application: Portable Lighting



Application: Radio



Application: Portable Stereo

Note:

Condition: temperature 20±2 ℃, relative humidity (55±20)%.

Explanation:

1) These are typical discharge curves for Allmax batteries.

2) 8 batteries were tested under each discharge condition.

7. Using Advice

The battery is applicable for all electric appliances, especially high powered digital devices, such as toys, portable stereos, frequently used torches, etc.

8. Electrolyte Leak Proof Characteristics

Item	Condition	End Period	Result	Acceptance Standard
Over-discharge	3.9 Ω 24 h/d discharge at 20±2 ℃, (55±20)% RH	E.P.V= 0.45 V	There shall be no deformation exceeding the specified dimensions, nor leakage [a] recognized by human eye.	N=8 Ac=0 Re=1
Leakage test under different conditions	At temperature 20±2 ℃, (55±20)% RH	48 months		Less than 50 ppm
	At temperature 45±2 ℃, (50±15)% RH	90 days		N=40 Ac=1 Re=2
	At temperature 60±2 ℃, (90±5)% RH	20 days		

Note:

a) Leakage means unplanned escape of electrolyte, gas or other material from a battery.

9. Safety Characteristics [a]

Item	Test Procedure	End Period	Result	Acceptance Standard
External short circuit	An undischarged battery is directly connected with its positive and negative polarity.	24 hours	There shall be no fire and no explosion [b] of battery.	N=5 Ac=0 Re=1
Incorrect installation	One of four batteries connected in series has to be connected with its reversed polarity.	24 hours		N=20 Ac=0 Re=1
Storage after partial use	Discharge by 600mA, 2 hours per day until the service time falls by 50% of MAD value and followed by storage at 45±2 ℃.	30 days	There shall be no fire and no explosion [b] of battery, nor leakage recognized by human eye.	N=5 Ac=0 Re=1

Note:

a) Condition: at temperature 20±2 ℃.

b) Explosion means an instantaneous release wherein solid matter from any part of the battery is propelled to a distance greater than 25 cm away from the battery.

10. Caution for Use

a) Improper use of batteries may result in explosion or leakage, causing personal injury and/or property damage.

b) Keep out of reach of children.

c) Do NOT charge or recharge the batteries.

d) Do NOT expose to heat or dispose of in fire.

e) Do NOT install backwards (+ and -), disassemble, or deform.

f) Do NOT short-circuit the batteries. When (+) and (-) terminals of the battery are connected, they become short-circuited.

g) Do NOT mix used and new batteries or batteries of different types or brands. Replace all batteries at the same time with the same brand and type.

h) Drained batteries should be removed and disposed of properly. Remove batteries from devices if they are not used for an extended period, unless it is for emergency equipment.

i) Store in a cool and dry location away from metal objects.

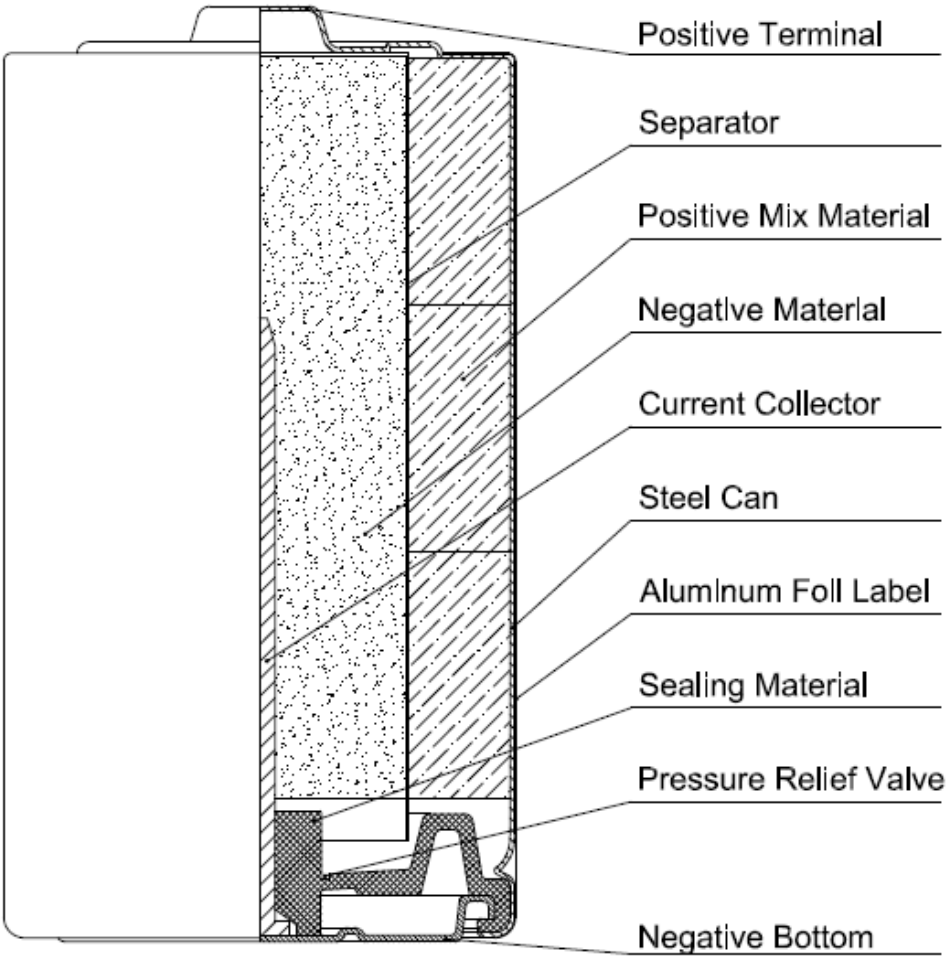
11. Shelf Life and Expiry Date Marking

Shelf Life: 7 years guaranteed under proper storage condition.

12. Battery Structure (Page 7)

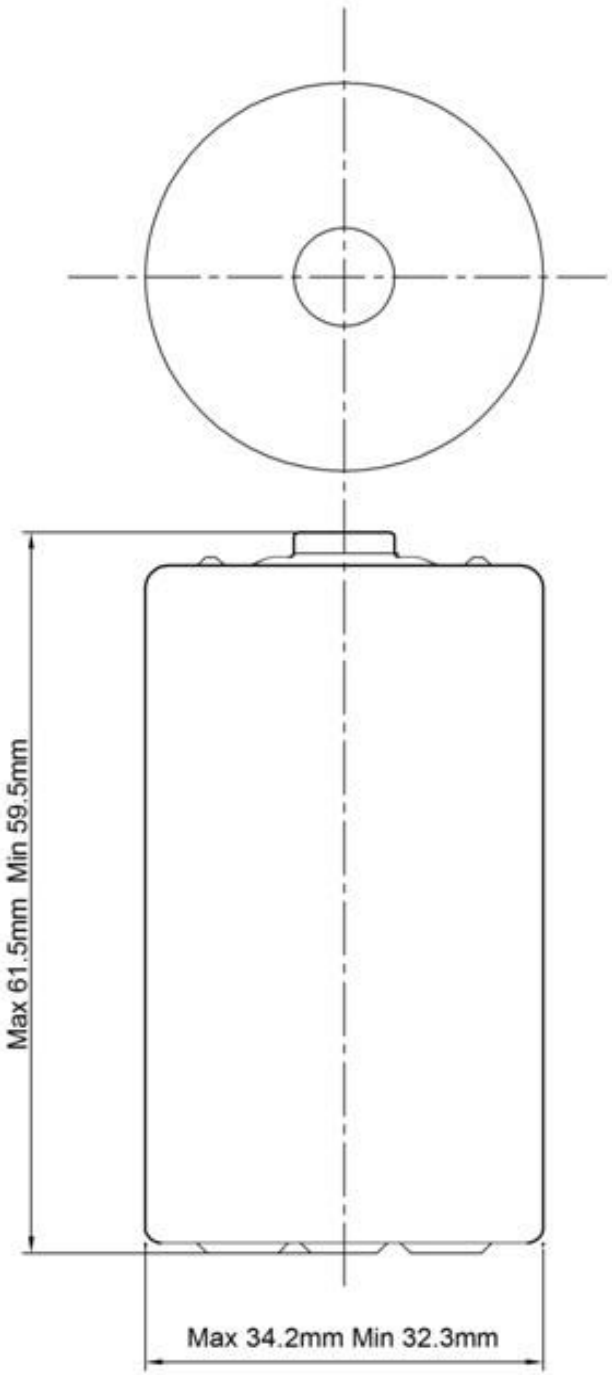
13. Battery Dimension (Page 8)

Battery Structure



Battery Structure
LR20-901

Battery Dimension



Battery Dimension
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