



Alkaline Zinc-Manganese Dry Battery

Specification

Model: LR20 D 1.5V

Drafted	Checked	Approved
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Customer Confirmation	Corporate Name	
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If manufacturer want to modify the product technology specification, we won't inform you additionally



1 Scope

This specification defines the technical requirements for LR20 Alkaline cells distributed by HJBP power. If not other wise specified,the technical requirement sand dimensions for cells should meet or exceed the requirements of GB/T8897.1(2)(5)-2013, IEC/EN60086-1(2)(5):2011.

2 Reference documents

- GB8897.1-2013(IEC/EN60086-1:2011,MOD) Primary batteries-Part 1:General
 - GB8897.2-2013(IEC/EN60086-2:2011,MOD) Primary batteries-Part 2:Physical and technological specifications
 - GB8897.5-2013(IEC/EN60086-5:2011,IDT)Primary batteries-Part 5:Safety of batteries with aqueous electrolyte
- The battery meets the standard of EU battery directive 2006/66/EC.

3 Chemical systems, voltages and designation

3.1 Chemical systems:

Alkaline manganese battery

Zinc-Manganese dioxide (Alkali metal hydroxide)

Chemical System Zn/KOH-H₂O/MnO₂

3.2 Nominal voltage:1.5V

3.3 Designation

IEC&GB(China): LR20, D; ANSI Number: 13A ; JIS Number: AM1 Other: 373

Heavy Metal Contents

Metal name	Hg	Cd	Pb
Limited contents	0.0005%(5ppm)	0.0020%(20ppm)	-
Contents	without	without	without

4 Battery Weight and Service output

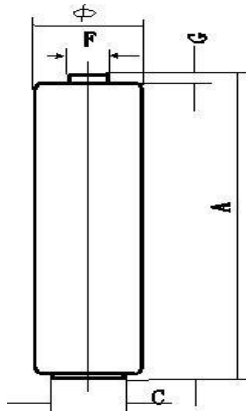
4.1 Battery Weight:140.0g(Average)

4.2 Service output: 15000mAh

(Test conditions 20±2°C, RH60±15% 10Ω, 4h/d,EPV=0.9V),EPV(end-pointed voltage)

5 Battery Dimensions

The batteries meet dimensions of the attached drawing



Model	LR20	
Measure No. A	Max (Unit:mm)	Min (Unit:mm)
A	61.5	59.5
C	-	18.0
F	9.5	-
G	-	1.5
Ø	34.2	32.3

6 Voltage and Short current

Item	OCV(V)	CCV(V)	SCC (A)	Sample voltage
Initial (3 months)	$1.58 \leq \text{OCV} \leq 1.65$	≥ 1.45	≥ 10.0	GB/T2828.1-2012, One sampling AQL=1.0 MIL-STD-105E, Class II, Double Sampling, AQL=0.4
12 months Storage	≥ 1.56	≥ 1.40	≥ 9.0	

OCV measurement: The inner resistance of Voltage Metre is above $1M\Omega$

CCV measurement: After $0.2 \pm 0.01s$ by $R=3.9\Omega$

SCC measurement: $\pm 0.5\%$

7 Service output

Standard	Discharge conditions			Requirement of IEC/EN60086-2:2011 GB8897.2-2013	MAD Delayed discharge performance	
	Load	Discharge method	EPV		Initial	After 12months12
GB	600mA	2h/d	0.9	11h	15h	13.5h
	10	4h/d	0.9	85h	110h	95h
IEC	3.9	24h/d	0.9	/	35h	32h
EN	2.2	1h/d	0.8	16h	22h	20h
	1.5	4min/15min,8h/d	0.9	520min	600min	550min
REF	3.9	24h/d	0.9	/	35h	32h
	10	4h/d	0.9	/	19.3h	19h

Initial: 60 days after production

Test condition: $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and $60 \pm 15\% \text{RH}$



8 Leakage Resistance

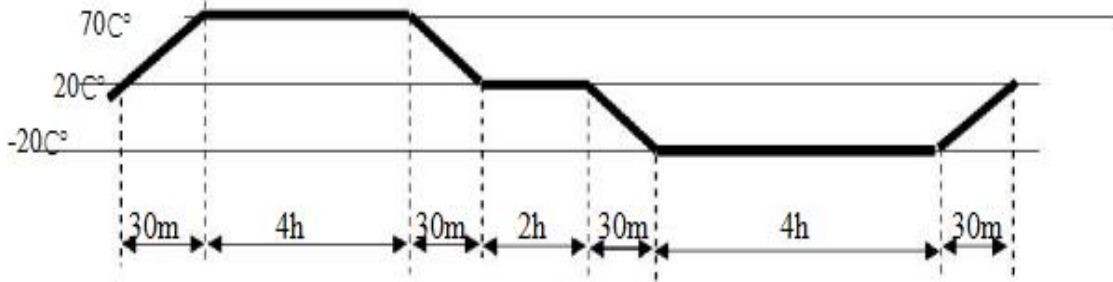
Item	Test conditions	Sample size	Requirements	Acceptance
Over discharge	2.2Ω 24h/d for 48h at 20°C±2°C	N=9pcs	No leakage, Max of 0.35mm height increase	Ac=0,Re=1
High temperature, high humidity storage	Exposed to a temperature of 60°C±2°C and RH90±5% for a period of 3 weeks.	N=20pcs	No leakage	Ac=0,Re=1
45°C dry storage	Stored for 12 weeks at 45°C	N=20pcs	No leakage	Ac=0,Re=1

9 Safety Requirement

Item	Test conditions	Sample quantity	Requirements IEC60086-5:2011 GB8897.5-2013	Acceptance
Partial use	Stored at 45°C±2°C for 30days after undischarged batteries were test discharged 3.9Ω 24h/d EPV=1.0V 3.91v	N=5pcs	No leakage, no explosion	Ac=0,Re=1
Thermal shock	See the following note 1. Total 10 cycles	N=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.	N=5pcs	No explosion	Ac=0,Re=1
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 note 2.	N=5pcs	No explosion	Ac=0,Re=1
Over discharge	Discharge one test sample battery(C1) with 43Ω resistance load until EPV is 0.6V, Connect three undischarged batteries and the sample battery in series with a 7.5Ω resistance load(R1) as shown in note 3, Maintain the circuit until the CCV of the series string reaches 2.4V.	N=5pcs	No explosion	Ac=0,Re=1

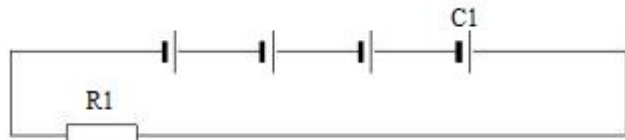
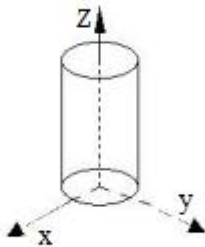


Note1: Thermal shock-



Note2: Free fall

Note3: Over discharge



10 Inspection rules

Deliver inspection: Depending on GB/T2828.1-2012

Item	Test	Item	IL	AQL
1	Dimension	5	S-2	0.4
2	Appearance	--	II	1.0
3	Discharge capacity	7	--	--
4	Open-circuit voltage	6	II	1.0

Routine inspection: Depending on GB2829 and QB/T2389

11 Inspection for service output

11.1 9 samples shall be tested for service output.

11.2 If the average value is equal to or more than the value of table 1, and if the number of batteries showing a value less than 80% of the value of table 1 is 1 or less. The batteries are considered to conform to the requirement.

11.3 If the average value is less than the value of table 1, or if the number of batteries showing a value less than 80% is 2 or more, the test shall be repeated with other 9 pieces. At the second test, if the average value is equal to or more than the value of table 1, and if the number of batteries showing a value less than 80% of the value of table 1 is 1 or less, these batteries are considered to conform to the requirement.

11.4 At above second test, if the average value is less than the value of table 1, or if the number of batteries showing a value less than 80% of the value of table 1 is 2 or more, the batteries are considered not to conform to the requirement. third test shall not be performed.



12 Instructions for use

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

13 Display and storage

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

14 Storage life

Storage life of batteries are five years long at 20°C±2°C and RH 60±15%.

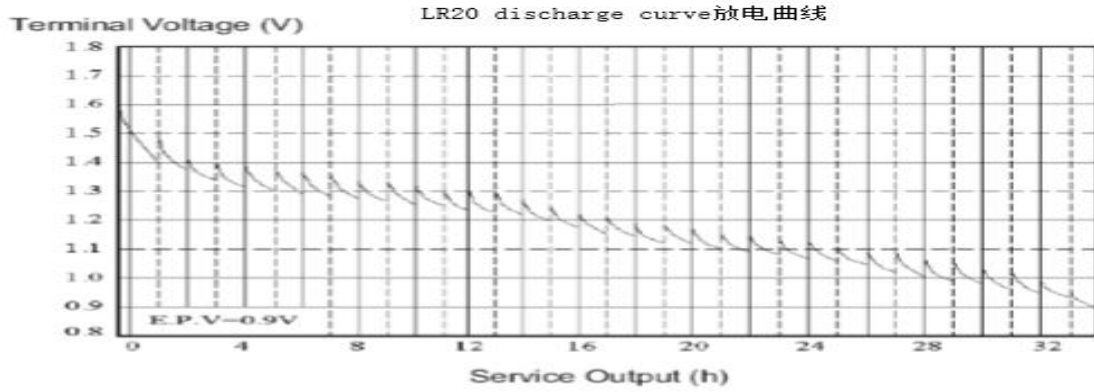
15 Marks

- 15.1 Designation: LR20 D ALKALINE
- 15.2 Year and month of manufacture,which maybe in code, or the expiration of a guarantee period in clear.
- 15.3 Polarity of terminals: “+” “-”
- 15.4 Nominal voltage: 1.5V
- 15.5 Mercury content(): No Mercury & Cadmium Added or 0% Mercury&Cadmium
- 15.6 Name or trade mark, manufacturer or supplier: HJBP/NX/YOUR BRAND/YOUR PRIVATE LABEL
- 15.7 Cautionary advice
Do not dispose of in fire, recharge, put in backwards, mix with used or other battery types-may explode or leak and cause personal injury.
- 15.8 Marking of separate collection.

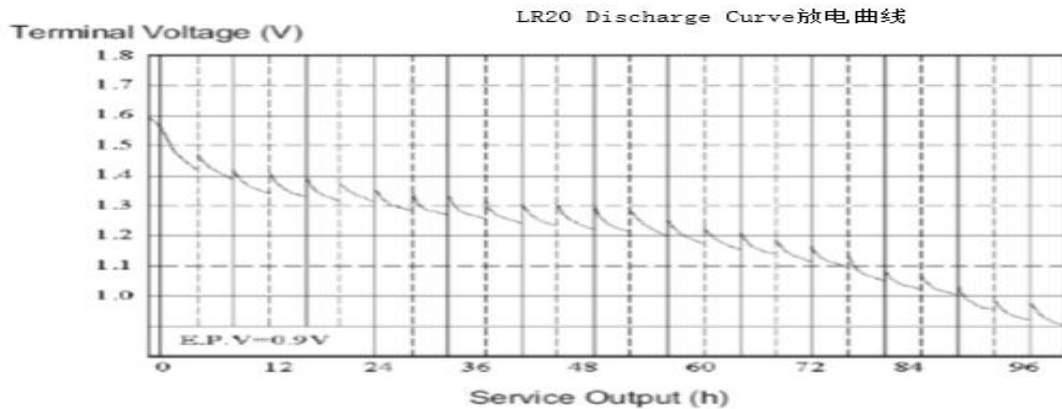


16 Typical Discharge Characteristics Marks

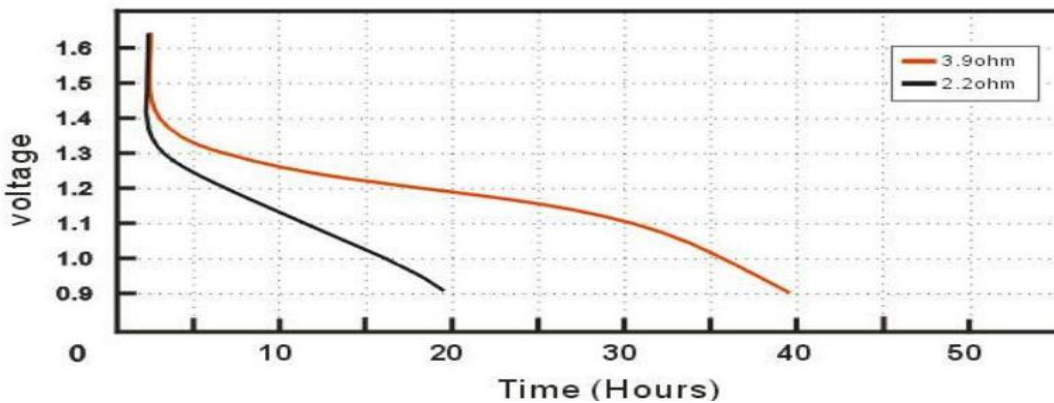
3.9 ohm, 1 h/d, EPV=0.9V(discharge condition 20°C±2°C and RH 60±15%)



10 ohm, 4 h/d, EPV=0.9V(discharge condition 20°C±2°C and RH60 ±15%)



2.2/3.9 ohm, 1 h/d, EPV=0.9V(discharge condition 20°C±2°C and RH 60±15%)



Note:

Thank you in advance for your reading.

1. With the progress of product technology, technical parameters, the specification will be updated too, Please contact HJBP power for latest specification.
2. If you need make battery pack or other battery or OEM your brand, your private label, Please contact us.