Alkaline Zinc-Manganese Dry Battery
Technology Specification

Customer _____

Part name Alkaline Zinc-Manganese Dry Battery

Model No D LR20 1.5V

Serial No _____

Produce No _____

Approved by		**Drafted by**	Wenfei liang
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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 1.5V LR20Alkaline cells distributed by Pkcell. If not otherwise specified, the technical requirements and dimensions for cells should meet or exceed the requirements of GB/T 8897.1-2008,GB 8897.2-2008

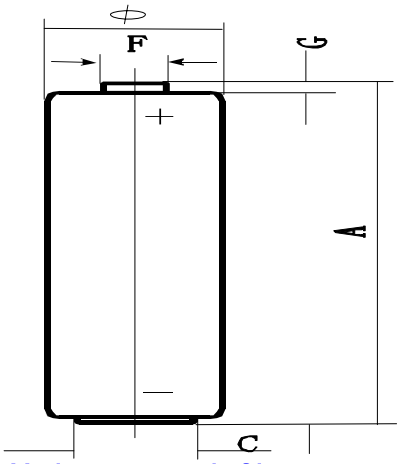
2 Reference documents

GB8897.1-2008(IEC60086-1:2000,IDT) Primary batteries-Part 1:General
GB8897.2-2008(IEC60086-2:2001,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 systems ,voltages and designation

3.1 Chemical systems:Alkaline manganese battery
Zinc-Manganese dioxide
3.2 Nominal voltage:1.5V
3.3 Designation
IEC&GB(China): LR20; ANSI Number: D;

4 LR20 Battery Dimensions



The	LR20	
Measure No	**Max**	**Min**
A	*61.5*	
C		*18.0*
F	*9.5*	
G		*1.5*
Ø	*34.2*	*32.2*

5 Voltage and Short current

Item	OCV(V)	CCV (V)	SCC (A)
Initial	1.56≤OCV≤1.65	≥1.45	≥7.0
After 12 months	≥1.56	≥1.4	≥6.0

OCV measurment:The inner resistance of Voltage Metre is above 1MΩ

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C.C.V. measurment: After 0.2±0.01sec by R=5.0Ω

SCC measurment:±0.5%

6 LR20 discharge performance :

Discharge conditions				Averge Minimun Discharge time
Load(Ω)	Daily period	E.P. (V)	Initial	Delayed discharge performance after 12 months
3.9	24h/d	0.9	35H	32H
2.2	1/d	0.9	18H	17H
10	4h/d	0.9	110H	100H

Initial:60 days after pruduction

Test condition: 20℃±2℃ and 60±15%RH

7 Leakage Resistance

Item	Test conditions	Sample size	Requirements	Acceptance
Overdischarge	10Ω 24h/d for 48h at 20℃±2℃,	n=9pcs	No leakage;Max of 0.35 mm height increase	Ac=0,Re=1

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High Temperature and humidity storage	exposed to a temperature of 60℃±2℃ and RH90±5% for a period of 3 weeks.	n=20pcs	No leakage	Ac=0, Re=1
45℃ Dry Storage	Stored for 12 weeks at 45℃	n=20pcs	No leakage	Ac=0, Re=1

8 Safety Requirement

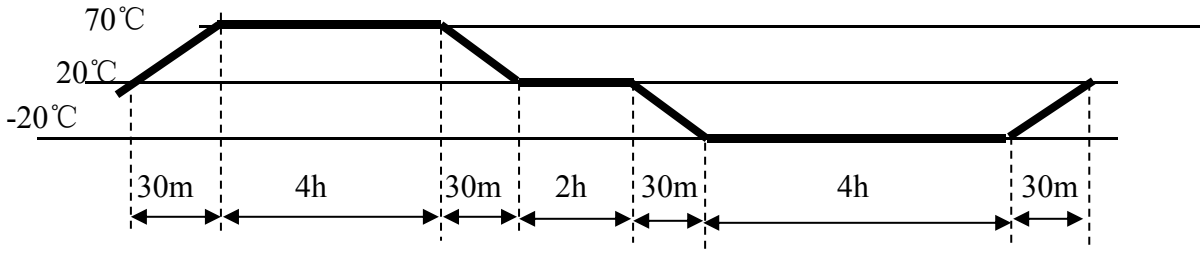
Item	Test conditions	Sample size	Requirements of IEC60086-5:2005& GB8897.5-2006	Acceptance
Partial Use	Stored at 45℃±2℃ for 30days after undischarged batteries were test discharged 3.9Ω 24h/d, EPV=1.0V.	n=5pcs	No leakage;No explosion	Ac=0, Re=1
Thermal shock	See the following note 1, Total 10 Cycles	n=5pcs	No explosion	Ac=0, Re=1
Incorrect installation(3 + 1 anti-charge test)	Place three undischarged and unconditioned batteries in a series with one	n=5pcs	No explosion	Ac=0, Re=1

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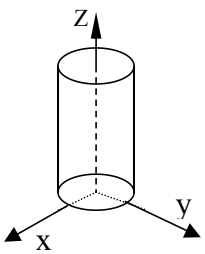
	test sample battery reversed, Complete the circuit until vent activation or until the temperature of the reversed battery returns to ambient.			
Item	Test conditions	Sample size	Requirements of IEC60086-5:2005& GB8897.5-2006	Acceptance
Free fall	Drop each undischarged battery Two times, oriented in each of three mutually perpendicular face (six total) from a height 1 meter, onto a concrete surface, see the following note 2	n=5pcs	No explosion	Ac=0; Re=1

Overdischarge	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 1.2V	n=5pcs	No explosion	Ac=0,Re=1

Note 1: Thermal shock



Note 2: Free fall



9 Inspection rules

10.1 Deliver inspection: Depending on GB2828

Number	Test	Item	IL	AQL
1	Dimensions	5	S-2	0.4
2	Appearance	--	II	1.0
3	Discharge capacity	7	--	--
4	Open-circuit voltage	4.5	II	1.0

Routine inspection: Depending on GB2829 and QB/T2389

10 Inspection for service output:

10.1 9 samples shall be tested for service output

10.2 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.

10.3 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.

10.4 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.

11 Instructions for use

11.1 Always select correct size and grade of battery most suitable fot intended use.

11.2 Replace all batteries of a set at the same time

11.3 Clean the battery contacts and also those of the equipment prior to battery installation

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11.4 Ensure that batteries are installed correctly with regard polarity(+ and -);

11.5 Remove batteries from equipment which is not be used for an extend period of time;

11.6 Remove exhausted batteries promptly..

12. Disply and storage

12.1 Batteries shall be stored in well-ventilateddry and cool conditions

12.2 Battery cartons should not be piledup in severa layers,or should not exceed a specified height;

12.3 Batteries should not be exposed to direct sun ray for a long time or placed in areas where they get wet by rain. ;

12.4 Do not mix unpacked batteries so as to avoid mechanical damage and/or short circuit among each other

13 Storage life

Storage life of batteries are ten years long at 20℃± 2℃ and RH 60±15%

14 Marks

15.1 Designation;

15.2 Polarity of terminals;

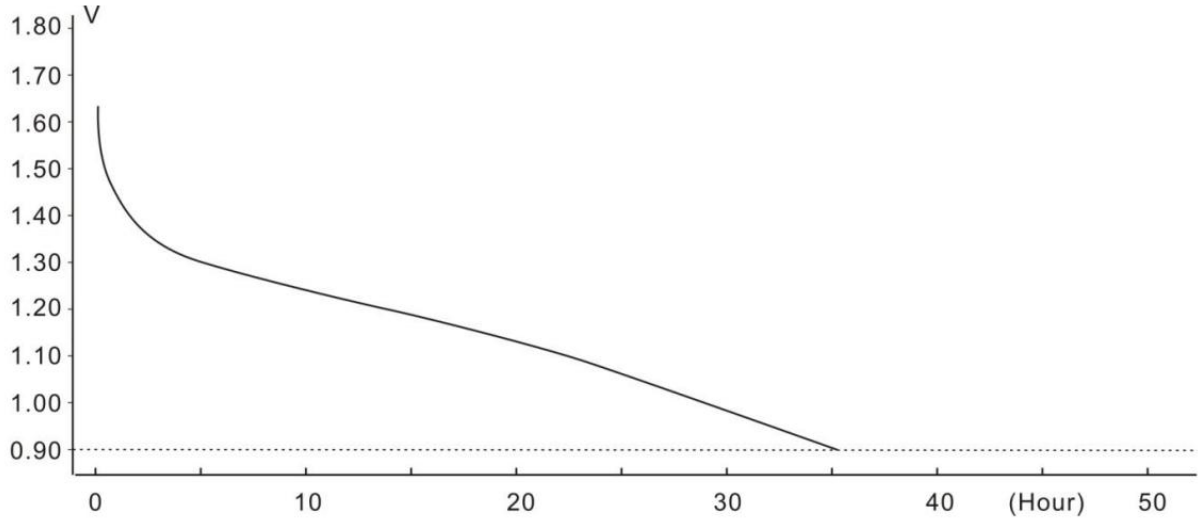
15.3 Nominal voltage;

15.4 Mercury content;

15.5 Name or trade mark , manufacturer or supplier ;

15.6 Cautionary advice

Schematic diagram of discharge:



discharge Load: 3.9Ω

……..END……..

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