TECHNICAL SPECIFICATION

FOR

CARBON ZINC BATTERY

TYPE: R03(PVC)

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1. Scope

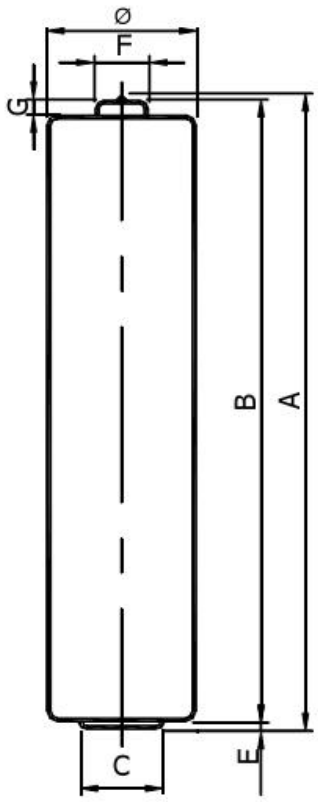
This specification is applicable to the CARBON ZINC BATTERY R03 supplied by DONGGUAN TIANQIU ENTERPRISE CO., LTD.

2. Designations

2.1Defining

At the temperature of 20±2℃, the humility of 60±15%，loading at 75Ω discharge,4 hour per day, till the voltage down to 0.9V

3. Dimensions



Symbols	Specification（mm）	
	Maximun	Minimun
A	44.5	43.3
B		43.3
C		4.3
E	0.5	
F	3.8	
G		0.8
Ø	10.5	9.5

Notes:

A maximum overall height of the battery;

B minimum distance between the flats of the positive and negative contacts;

C minimum outer diameter of the negative flat contact surface;

E maximum recess of the negative flat contact surface;

F maximum diameter of the positive contact within the specified projection height;

G minimum projection of the flat positive contact;

Ø maximum and minimum diameters of the battery.

4. Technical Specifications

Item	Characteristic
Nominal capacity	330mAh
Nominal voltage	1.5V

Dimensions	maximum height:44.5mm Maximum diameter: Φ10.5mm
Approximate weight	7.75±0.35g

5. Performance

5.1 Test conditions

Unless otherwise specified, the test conditions shall be, as a general rule, at the temperature of 22±2℃ and the relative humidity of 60±15%.

5.2 Electrical characteristics

NO.	Item	Test condition	Requirement
5.2.1	storage characteristics	Sampling plan：MIL-STD-105E, General Inspection Lever Ⅱ, Single Sampling, AQL=0.4 Remark: Load voltage test method: 5.1Ω/0.3S, The initial samples shall be tested within 30 days after delivery	Open Circuit Voltage(V) load voltage(V) Initial： ≥1.60 ≥ 1.30 12 months @ RT: ≥1.53 ≥ 1.25 24 months @ RT: ≥1.52 ≥ 1.20
5.2.2	Service output	Load resistance:3.6Ω; Discharge method:15s/m，24h/d continuously discharge; End point voltage 0.9V	Initial≥150cycles 12 months @ RT≥135cycles 24 months @ RT≥120cycles
		Load resistance:5.1Ω; Discharge method:4m/h，8h/d discharge; End point voltage 0.9V	Initial≥60min 12 months @ RT≥54min 24 months @ RT≥48min
		Load resistance:10Ω; Discharge method:1h/d discharge; End point voltage 0.9V	Initial≥120min 12 months @ RT≥108min 24 months @ RT≥100min
		Load resistance:75Ω; Discharge method:4h/d discharge; End point voltage 0.9V	Initial≥21h 12 months @ RT≥19h 24 months @ RT≥17h
5.2.3	Over-discharge	Continuously discharge: 15Ω, End point voltage 0.6V	No leakage, No deformation; N=9, Ac=0, Re=1
5.2.4	High temp. storage	45℃, RH below 70% for 30days	No leakage; N=40 Ac=1, Re=2
5.2.5	Short circuit test	Short circuit for 24 hours	No explosion; N=5，Ac=0，Re=1
5.2.6	Incorrect installation	Four batteries are connected in series with one reversed, then short circuit for 24 hours.	No explosion; N=20，Ac=0，Re=1.

5.2.1&5.2.2 acceptance standard:

1) 9 pieces of battery will be tested for each discharging method.
2) The average discharging time from each discharging method shall be equal to or greater than the specified figure, and no more than one battery has a service output less than 80% of the specified figure.
3) One retest is allowed to confirm the results if the first test didn't meet the requirements.

5.3 Expiration date

3 years after delivery under normal storage conditions

6. Packing and Marking

Any specific design and packing requirements will be accommodated as required. But as a general, the following markings will be printed, stamped or impressed on the body of the battery:

1）Designation: R03.

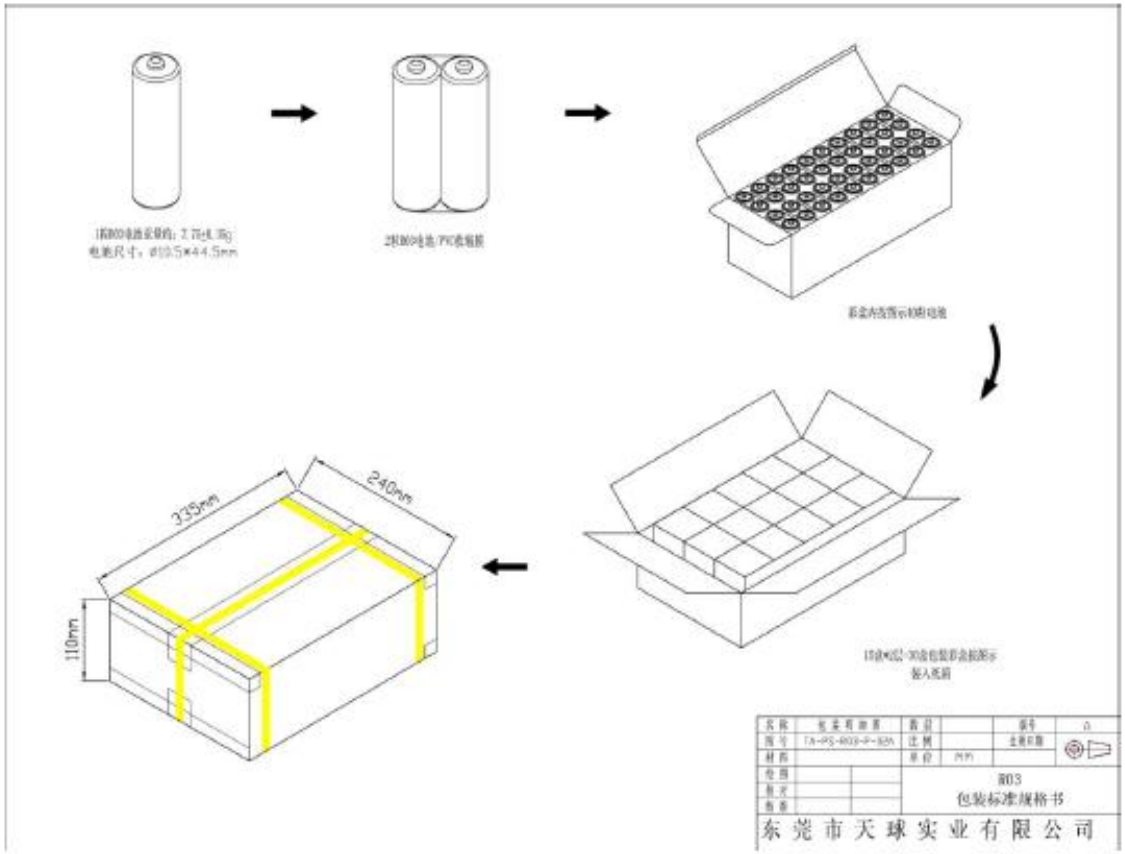
2）Manufacturer's logo " " and/or its name "TIANQIU".

3）Polarity Marking:" + "and /or "-".

4）Caution: DO NOT RECHARGE, IMPROPERLY INSERT OR DISPOSE OF IN FIRE.

5）Battery Marking Design

6）Packing



7. Caution for Use

1) Since the battery is not designed to be charged, there are risks of electrolyte leakage or causing damage to the device if the battery is charged.
2) The battery shall be installed with its "+" and "-" polarity in correct position, otherwise may cause the battery to be charged or over-discharged.
3) Short-circuiting, heating, disposing of in fire and disassembling the battery are prohibited.
4) Battery cannot be forced discharge, which lead to excess internal gas generation and, may result in bulging, leakage and explosion.
5) New and used batteries cannot be mix used at the same time, when replaced batteries, it is recommend to replace all and with the same brand type.
6) Exhausted batteries should be removed from compartment to prevent over-discharge, which cause leakage and damage to the device.
7) Direct soldering is not allowed, which will damage the battery.
8) Keep the battery out of the reach of children to prevent swallow, in case of accident should contact physician at once.
9) The battery should not be dismantled and deformed.

caution：

- If a battery is leakage and materials contact eyes, flush immediately with running water for at least 15 minutes. Consult an ophthalmologist at once.
- If battery emits an odor, fever, discoloration, deformation or any abnormal phenomena appeared in the process of use/storage, removed the battery immediately from the device and dispose of the battery.

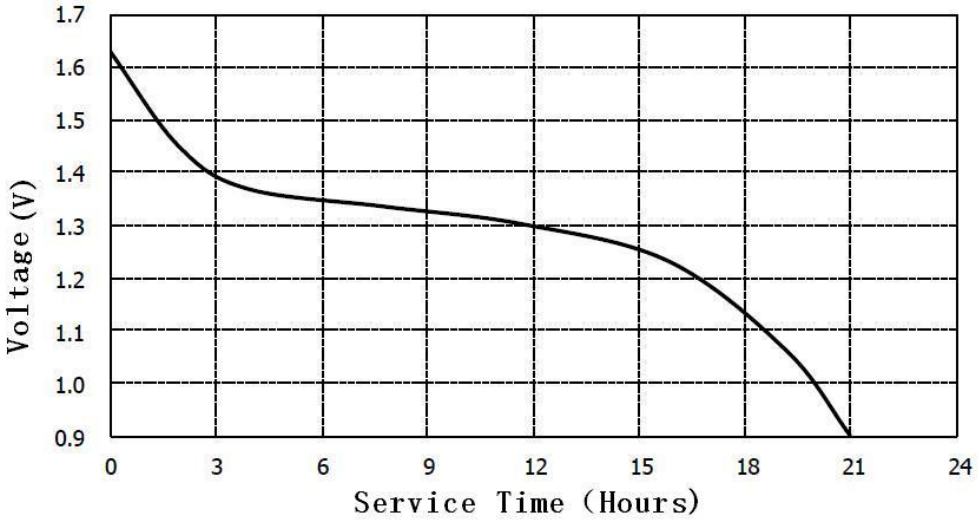
8. Referenced Standards

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

IEC 60086-2:2021 - Primary Batteries - Part 2: Physical and electrical specifications

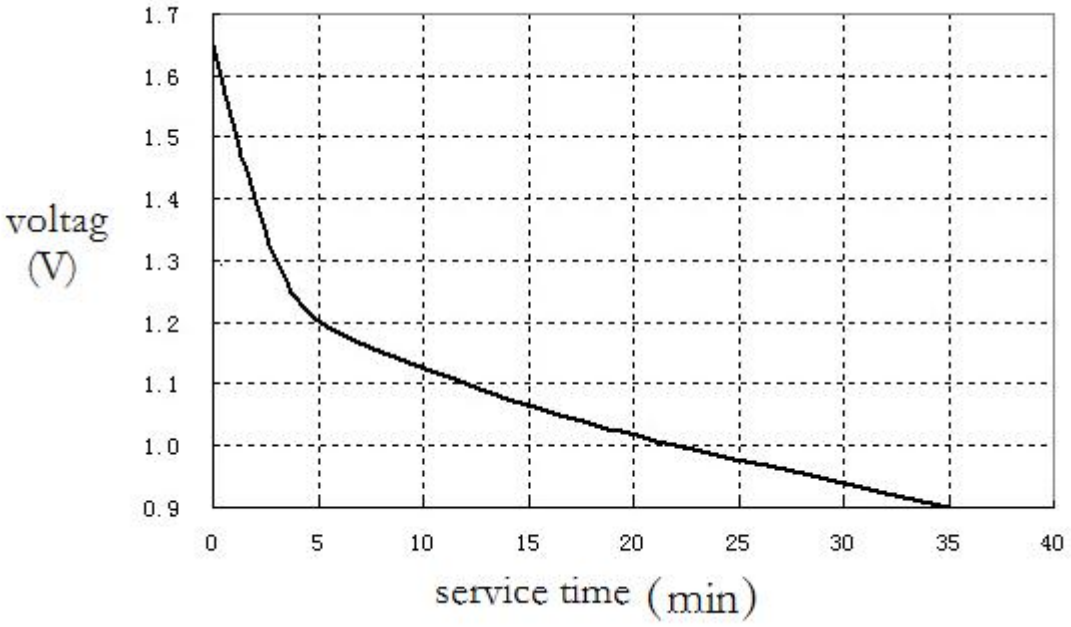
IEC 60086-5:2016 - Primary Batteries - Part 5: Safety of batteries with aqueous electrolyte

9. Discharge Curves



Discharge method: 75Ω, 4 hour/day EV=0.9V

Temperature: 20±2℃



Discharge method: 3.9Ω, 24 hour/day EV=0.9V

Temperature: 20±2℃