

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

2.1 Defining

At the temperature of $20 \pm 2^\circ\text{C}$, the humidity of $60 \pm 15\%$, 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

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 $22 \pm 2^{\circ}\text{C}$ and the relative humidity of $60 \pm 15\%$.

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 ≥ 150 cycles 12 months @ RT ≥ 135 cycles 24 months @ RT ≥ 120 cycles
		Load resistance:5.1Ω; Discharge method:4m/h, 8h/d discharge; End point voltage 0.9V	Initial ≥ 60 min 12 months @ RT ≥ 54 min 24 months @ RT ≥ 48 min
		Load resistance:10Ω; Discharge method:1h/d discharge; End point voltage 0.9V	Initial ≥ 120 min 12 months @ RT ≥ 108 min 24 months @ RT ≥ 100 min
		Load resistance:75Ω; Discharge method:4h/d discharge; End point voltage 0.9V	Initial ≥ 21 h 12 months @ RT ≥ 19 h 24 months @ RT ≥ 17 h
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°C, 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

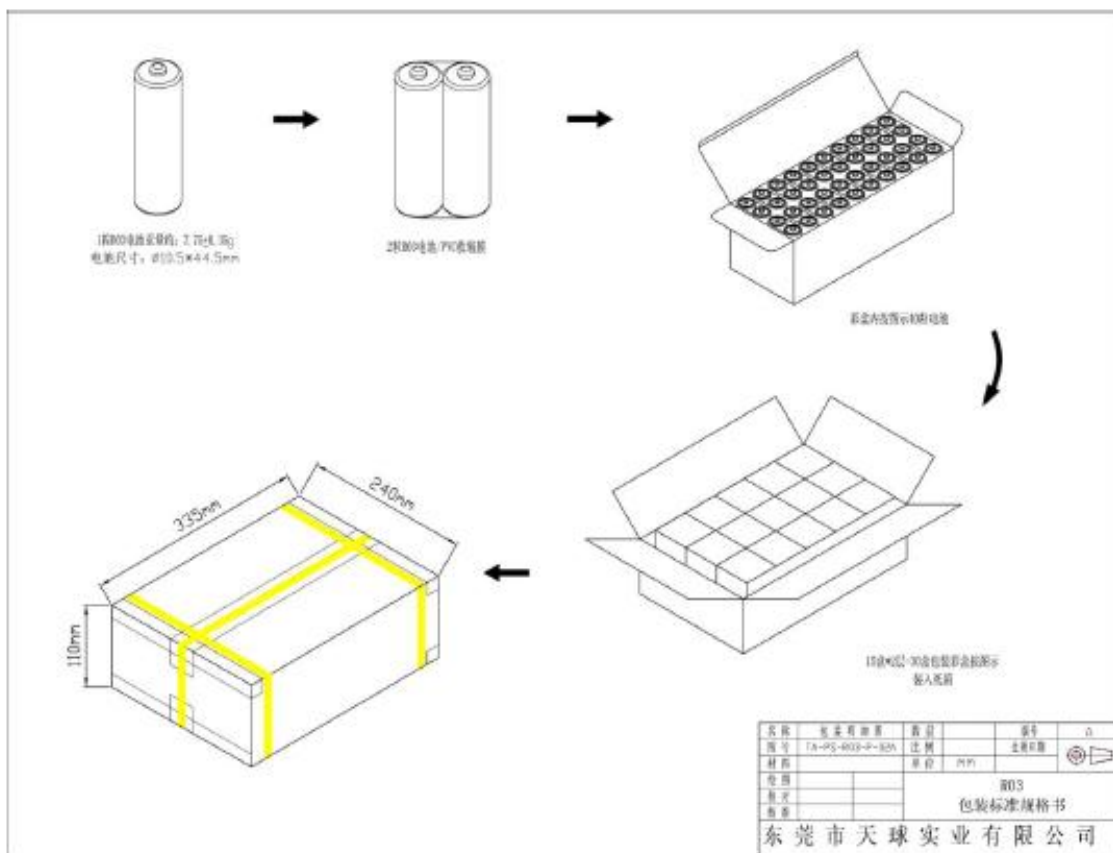
6. Packing and Marking

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:

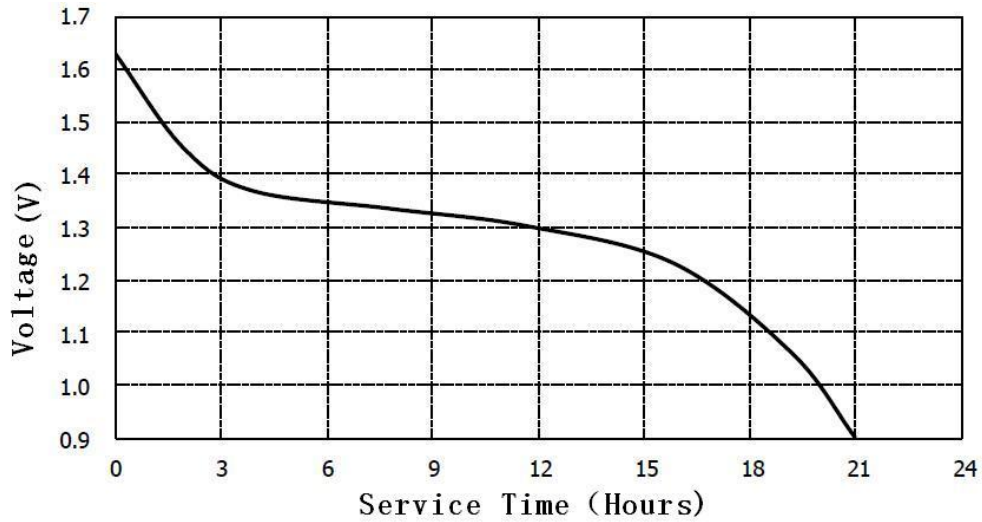
- » If a battery is leakage and materials contact eyes, flush immediately with running water for at least 15 minutes. Consult an ophthalmologist at once.
- » If battery emits an odor, fever, discoloration, deformation or any abnormal phenomena appeared in the process of use/storage, removed the battery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

8. Referenced Standards

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

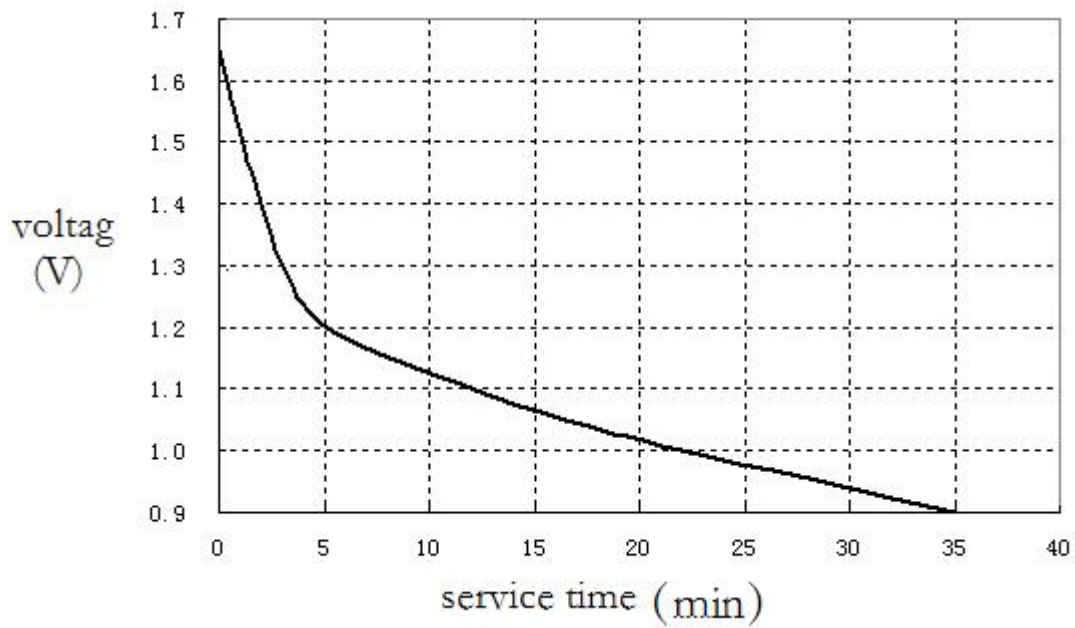
IEC 60086-2:2021 - Primary Batteries - Part 2: Physical and electrical specifications

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°C



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

Temperature: 20±2°C