
TECHNICAL SPECIFICATION
FOR ZINC MANGANESE DIOXIDE BATTERY

DATE: 16 IUL, 2013
SPEC NO.: FE R 03

SPECIFICATII TEHNICE PENTRU
BATERIILE SALINE (CLORURA DE ZINC)

DATE: 16 IUL, 2013
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1. Scope

This specification is applicable to Foton Economy, **R03** batteries.

1.1 Designations

IEC : R03 Others : AAA, 1212
 JIS : SUM-4 ANSI : 24D

1.2 Reference Document

IEC 60086-1 (2000-11) --- Primary Batteries - Part 1: General
 IEC 60086-2 (2001-10) --- Primary Batteries - Part 2: Physical and Electrical Specification
 IEC 60086-5 (2000-07) --- Primary Batteries - Part 5: Safety of batteries with aqueous electrolyte

2. Chemical System

Zinc-Manganese Dioxide (Zinc Chloride Electrolyte)
 * Hg max 0.0005%; Cd max 0.025%; Pb max 0.4% (percent in total weight)

3. Nominal Voltage : 1.5 volt

4. Average Weight : 9.5 g

5. Nominal Capacity

450 mAh (Conditions : 75Ω discharge 4hours per day at 20 ± 2°C, end point voltage 0.9 volt)

6. Electrical Characteristics

(Conditions : 5.0Ω ± 0.5% load resistance, measuring time 0.3 seconds, temperature at 20 ± 2°C, tested within 30 days after delivery)

	Off-load voltage (V)	On-load voltage (V)	* Flush current (A)	Acceptance Standard
New battery	1.55	1.30	2.5	MIL-STD105E, Class II, Double Sampling, AQL=0.4
After 3 mth. at 45°C	1.50	1.15	2.0	
After 12 mth. room temp.	1.50	1.15	2.0	

* The hair spring type ampere meter with ± 0.5% accuracy (0.5 level) shall be used.

7. Service Output

(Conditions : Test temp. 20 ± 2°C, tested within 30 days after delivery)

	Discharge Conditions			Average Minimum Discharge Time		
	Discharge Load	Daily discharge time	End Point Voltage (V)	New Battery	After 3 mth. at 45°C	After 12 mth. at room temp.
IEC Standard	75 Ω	4h	0.9	24h	22h	22h
	10 Ω	1h	0.9	150min	135min	135min
	5.1 Ω	4min/h, 8h/d	0.9	85min	76min	76min
	3.6 Ω	15sec/min	0.9	190 cycles	170 cycles	170 cycles

Satisfaction Standard : 9 pieces of battery will be tested for each discharging standard. The result of the average discharging time from each discharging standard shall be equal to or more than the average minimum time requirement and no more than one battery has a discharge time less than 80% of the specified figure.

1. Scop

Aceste specificatii sunt caracteristice pentru bateriile Foton Economy R03

1.1 Echivalente:

IEC : R03 Altele : AAA, 1212
 JIS : SUM-4 ANSI : 24D

1.2 Document referinta

IEC 60086-1 (2000-11) ---Baterii primare Partea 1: General
 IEC 60086-2 (2001-10) ---Baterii primare Partea a doua : Specificatii fizice si electrice
 IEC 60086-5 (2000-07) ---Baterii primare Partea a cincea: Siguranta bateriilor cu electrolit saturat cu apa

2. Sistem chimic

Zinc, Dioxid de mangan (clorura de zinc)
 * Hg max 0.0005%; Cd max 0.025%; Pb max 0.4% (procent din greutatea totala)

3. Tensiune nominala 1.5V

4. Greutate medie: 9,5 g

5. Capacitate nominala

450 mAh (Conditii : 75Ω rezistenta de sarcina, descarcare 4ore pe zi la 20 ± 2°C, tensiune finala 0.9 volti)

6. Caracteristici electrice:

(Conditii : 5.0Ω ± 0.5% rezistenta de sarcina, timp de masurare 0.3 sec, temperatura la 20 ± 2°C, testat pana in 30 de zile de la livrare)

	Tensiune in circuit deschis (V)	Tensiune de sarcina (V)	* Curent de varf (A)	Standard de acceptare
Baterie noua	1.55	1.30	2.5	MIL-STD105E, Class II, Double Sampling, AQL=0.4
Dupa 3 luni la 45°C	1.50	1.15	2.5	
Dupa un an la temperatura camerei	1.50	1.15	2.0	

*Se va folosi un ampermetru spiral cu acuratete de ± 0.5% (nivel 0.5)

7. Caracteristici de iesire

(Conditii : Temp test. 20 ± 2°C, testat pana in 30 de zile de la livrare)

	Conditii de descarcare			Media timpului minim de descarcare		
	Rezistenta de descarcare	Timp de descarcare zilnic	Tensiunea finala (V)	Baterie noua	Dupa 3 luni la 45°C	Dupa 12 luni la temperatura camerei
Standardul IEC	75 Ω	4h	0.9	24h	22h	22h
	10 Ω	1h	0.9	150 min	135min	135h
	5.1 Ω	4min/h, 8h/d	0.9	85min	76 min	76h
	3.6 Ω	15sec/min	0.9	190 cicluri	170 cicluri	170 cicluri

Standard de satisfactie : 9 baterii vor fi testate pentru ficare standard de descarcare. Rezultatul timpului mediu de descarcare pentru ficare standard de descarcare va fi egal sau mai mare decat media de timp necesar minim si nu mai mare decat o baterie ce are un timp de descarcare mai mic de 80% din cifra specificata.

8. Electrolyte Leakage Proof Characteristics

Item	Condition	Period	Characteristics	Acceptance Standard
Over-discharge Characteristics	15Ω continuous discharge at temp. 20 ± 2°C, Relative Humidity: 65 ± 20% RH	E.P.V = 0.6V	There shall be no deformation exceeding the specified dimensions, nor leakage recognized by human eye	N=40, Ac=1, Re=2
Storage Characteristics	At temp. 45 ± 2°C, Relative Humidity: less than 70% RH	90 days		N=40, Ac=1, Re=2

9. Safety Characteristics

Item	Condition	Period	Characteristics	Acceptance Standard
Short circuit Characteristics	Temp.: 20 ± 2°C	24 hours	There shall be no explosion of batteries	N=8, Ac=0, Re=1
Abusive Characteristics	Short circuit 4 pieces of battery in series, one of the 4 battery has to be connected with its polarity reversed	24 hours		

10. Marking

The following markings will be printed, stamped or impressed on the body of the battery: (1) Designation :

R03

(2) Distributor's brand name or abbreviation : **FOTON**

(3) Nominal voltage : **1.5V**

(4) Polarity : **"+"**

(5) Warning **EN/FR/RO: as specified in the artwork**

(6) Shelf Life Limit: **MM-YYYY format** (Appendix 7)

11. Caution for Use

(1) Since the battery is not manufactured for recharging, 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 "-" in correct position.

(3) Short-circuiting, heating, disposing of into fire and disassembling the battery are prohibited.

12. **Shelf Life** : 3 years after delivery under proper storage conditions.

13. **Battery Dimension** (Refer to Drawing DWG-S-001)

14. **Battery Structure** (Refer to Drawing DWG-S-002)

8. Siguranta la scurgeri a electrolitului

Item	Conditii	Perioada	Caracteristici	Standard de acceptare
Caracteristici pentru descarcarea profunda	15Ω descarcare continua la temp. 20 ± 2°C, umiditate relativa: 65 ± 20% RH	E.P.V= 0.6 V	Nu vor exista deformari ce depasesc dimensiunile specificate si nici scurgeri vizibile cu ochiul liber.	N=40, Ac=1, Re=2
Caracteristici de depozitare	La temp. 45 ± 2°C, Umiditate relativa: mai putin de 70% RH	90 zile		N=40, Ac=1, Re=2

9. Caracteristici de siguranta

Item	Conditii	Perioada	Caracteristici	Standard de acceptare
Caracteristicile de scurt-circuitare	Temp.: 20 ± 2°C	24 ore	Bateria nu explodeaza	N=9, Ac=0, Re=1
Caracteristici de abuz	Charging current: 40mA, temp. 20 ± 2°C	24 ore		

10. Marcaje

Urmatoarele marcaje vor fi imprimate, lipite sau tiparite pe baterie

(1) Tip de baterie: **R03**

(2) Brandul distribuitorului sau abreviere: **FOTON**

(3) Tensiune nominala: **1.5V**

(4) Polaritate : **"+"**

(5) Avertisment **EN/FR/RO: cum este specificat in artwork**

(6) Durata de viata de depozitare: format **MM-YYYY format** (Appendix 7)

11. Avertizari de folosire

(1) Intrucat bateria nu este creata pentru reincarcare, exista riscul aparitiei scurgerilor de electrolit care pot provoca daune aparatului in care este folosit in cazul in care se incearca reincarcarea bateriei.

(2) Bateria va fi introdusa respectandu-se polaritatea corecta +/-.

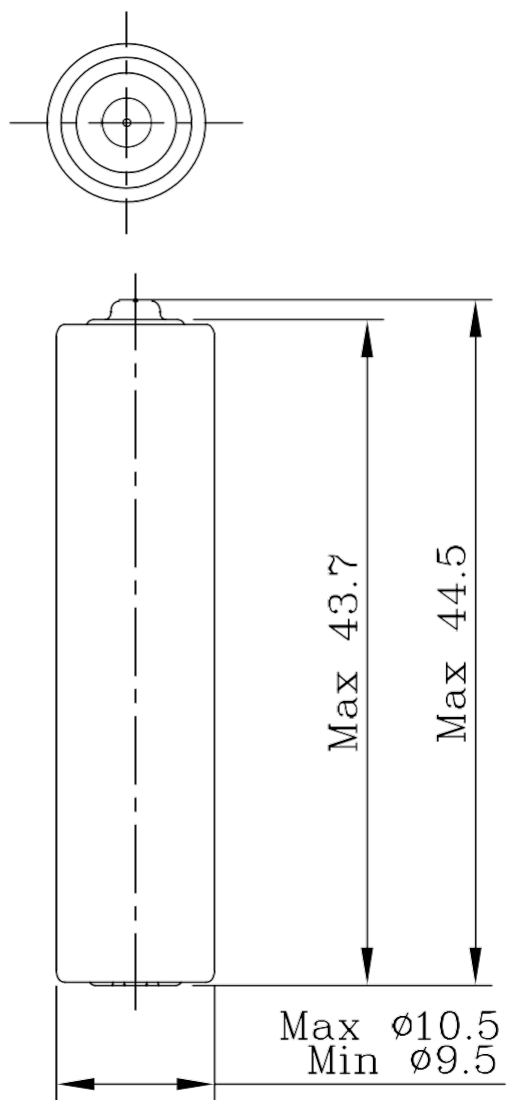
(3) Este interzisa scurt-circuitarea, aruncarea in foc sau demontarea bateriilor.

12. Durata de viata de depozitare : 3 ani dupa livrare, daca este depozitata in conditii optime.

13. Dimensiuni (vezi imaginea DWG-S-001)

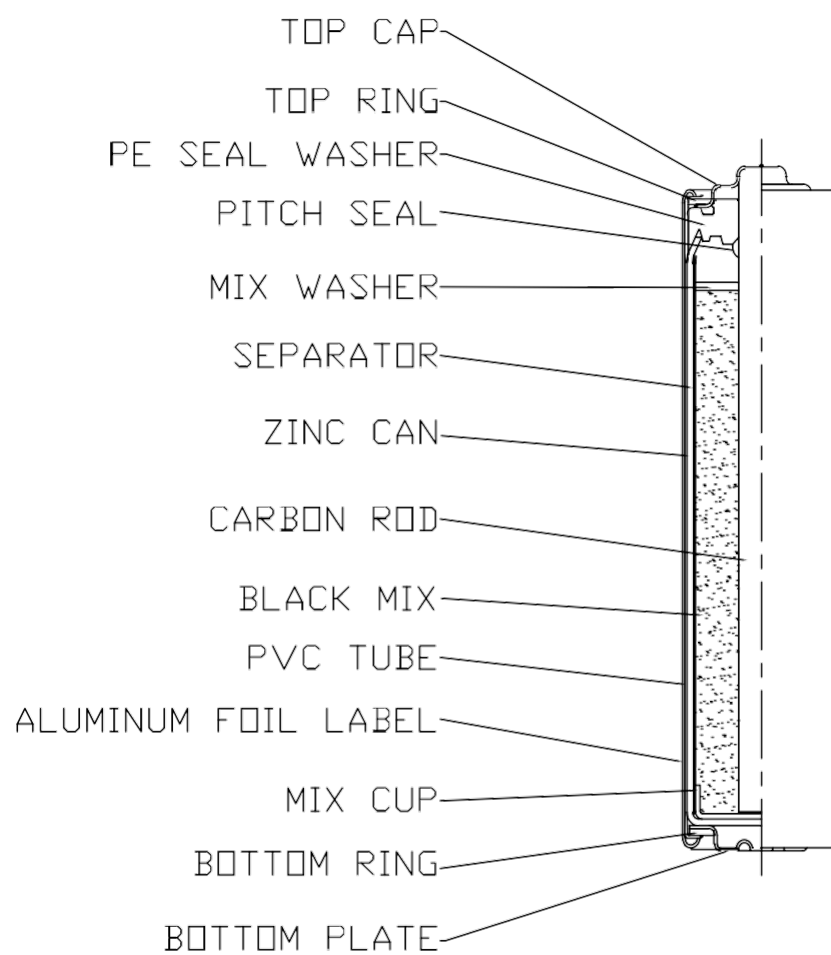
14. Structura bateriei (vezi imaginea DWG-S-002)

R03 BATTERY DIMENSION



MODEL: FE-R06 BATTERY		DWG. NO.: DWG-S-001
SCALE: NTS	DIMENSION: mm	APPROVED BY:
DATE: 1/1/05	DRAWN BY:	
TOLERANCES: <small>LINEAR ±1 ANGULAR ±1/4°</small> 3RD ANGLE PROJECTION		

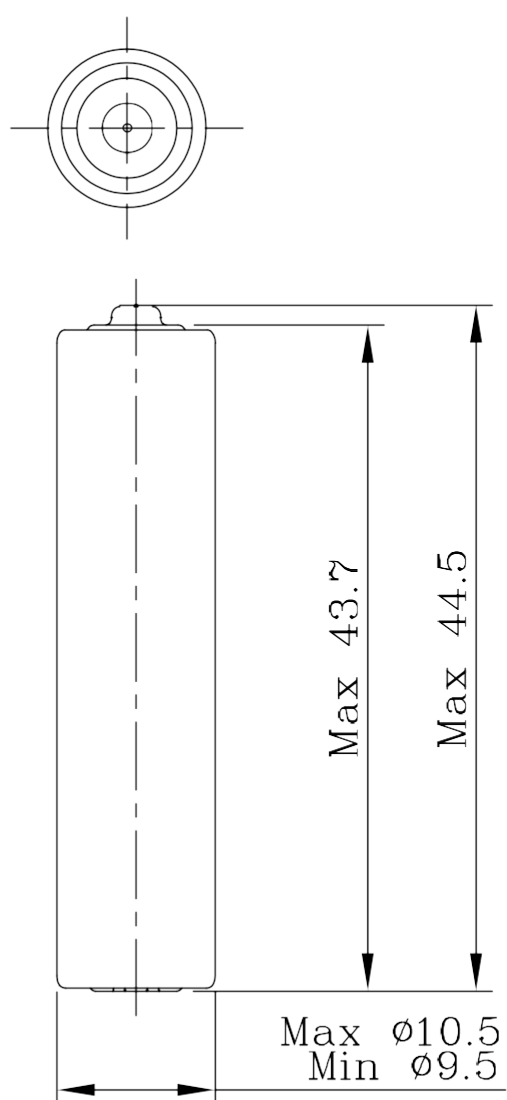
R03 BATTERY STRUCTURE



No.	Name	Material
1	Anode	Manganese Dioxide, Acetylene Black Zinc Oxide, Zinc Chloride
2	Cathode	Zinc Can

MODEL: FE-R06 BATTERY		DWG. NO.: DWG-S-002
SCALE: NTS	DIMENSION: mm	APPROVED BY:
DATE: 1/1/05	DRAWN BY:	
TOLERANCES: <small>LINEAR ±1 ANGULAR ±1/4°</small> 3RD ANGLE PROJECTION		

DIMENSIUNILE BATERIEI R03



MODEL: BATERIA FE-R06		DWG. NO.: DWG-S-001
SCALA: NTS	DIMENSIUNI: mm	APROBAT DE:
DATA: 1 / 1 / 05	DESENAȚ DE:	
TOLERANȚA: <small>LINEAR ±1 UNGHILAR ±1/4°</small> PROIECTIE DE UNGHII 3RD		

STRUCTURA BATERIEI R03

CAPAC SUPEIOR
INEL SUPEIOR
GARNITURA DE ETANSARE
MATERIAL DE ETANSARE
GARNITURA AMESTEC
SEPARATOR
RECIPIENT DE ZINC
TIJA CARBON
AMESTEC NEGRU
TUB PVC
FOLIE DE ALUMINIU
RECIPIENT AMESTEC INEL
INFERIOR
PLACA INFERIOARA

Nr	Nume	Material
1.	Catod	Dioxid de mangan, Acetilena (neagra), Oxid de Zinc, Clorura de Zinc
2.	Anod	Zinc

MODEL: BATERIA FE-R06		DWG. NO.: DWG-S-002
SCALA: NTS	DIMENSIUNI: mm	APROBAT DE:
DATA: 1 / 1 / 05	DESENAȚ DE:	
TOLERANȚA: <small>LINEAR ±1 UNGHILAR ±1/4°</small> PROIECTIE DE UNGHII 3RD		