

**TECHNICAL SPECIFICATION FOR
MANGANESE DIOXIDE LITHIUM BATTERY****TYPE:CR2025****SPÉCIFICATION TECHNIQUE POUR LA BATTERIE AU
LITHIUM AU DIOXYDE DE MANGANESE****TYPE:CR2025**

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1. Scope *Portée*

This specification is applicable to the Manganese Dioxide Lithium Battery CR2025 supplied by Guangdong TIANQIU Electronics Technology Co. Ltd.

Cette spécification s'applique à la batterie au lithium de dioxyde de manganèse CR2025 fournie par Guangdong TIANQIU Electronics Technology Co. Ltd.

2. Designations *Désignations*

2.1 Defining *Définir*

At the temperature of $20 \pm 2^\circ\text{C}$, loading at $15\text{k}\Omega$ continuous discharge, till the voltage down to 2.0V

À la température de $20 \pm 2^\circ\text{C}$, le chargement à $15\text{k}\Omega$ décharge continue, jusqu'à ce que la tension à 2.0V

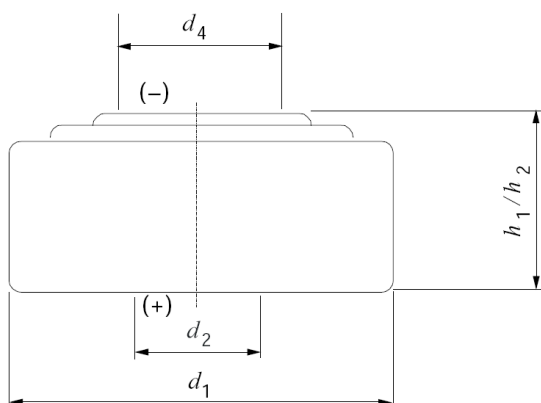
3. Designations and Dimensions *Désignations et dimensions*

3.1 Designations: *Désignations*

Manganese Dioxide Lithium Battery CR2025

Batterie au lithium au dioxyde de manganèse CR2025

3.2 Dimensions *Dimensions*



SPEC code Code de SPEC	specification standard(mm) Norme de spécification(mm)	
	MAX	MIN
h1/h2	2.5	2.2
d1	20.0	19.7
d2	-	-
d4	-	8.0

Note :

h1 battery maximum total height

batterie hauteur maximale total

h2 battery positive and negative minimum distance
between contacting surfaces

La distance minimale positive et négative de la batterie
entre le contact avec les surfaces

d1 Maximum and minimum diameter of the battery
Diamètre maximum et minimum de la batterie

d2 minimum diameter of the anode contact area
Diamètre minimum de la zone de contact de l'anode

d4 minimum diameter of the cathode surface
Diamètre minimum de la surface cathodique

4. Product characteristic *Caractéristique du produit*

Item Article	Characteristic Caractéristique
Nominal capacity Capacité nominale	160mAh /0.48Wh
Nominal voltage Tension nominale	3.0V
Discharge Voltage Voltage de décharge	2.0 V
Suggested continuously discharge Décharge continue suggérée	0.2mA
Suggested maximum pulse curren Courant d'impulsion maximum suggéré	15mA

Service temperature Température du service	-20~60℃
Storage Temperature Température de stockage	0℃~35℃
Storage humidity Humidité de stockage	45% ~ 75 % RH (no condensate) 45% ~ 75 % RH(pas de condensat)
Dimensions Dimensions	maximum height:2.5mm hauteur maximale:2.5mm Maximum diameter: Φ20mm Diamètre maximum : Φ20mm
Average weight Poids moyen	2.4g

5. Technical requirements Exigences techniques

5.1 Test conditions Conditions d'essai

Unless otherwise specified, the test conditions shall be, as a general rule, at the temperature of 20±2℃ and the relative humidity of 60±15%.

Sauf indication contraire, les conditions d'essai doivent être, en règle générale, à une température de 20±2℃ et à une humidité relative de 60±15%.

5.2 Electrical characteristics Electrical characteristics

NO. Numéro	Item Article	Test condition État du test	Requirement Exigence
5.21	Storage characteristics caractéristiques de stockage	Sampling plan: MIL-STD-105E, General Inspection Lever II, Single Sampling, AQL=0.4 Plan d'échantillonnage :MIL-STD-105E, Inspection générale Niveau II., Échantillonnage unique, AQL-0,4 Remark: Load voltage test method: 15KΩ/1S, The initial samples shall be tested within 30 days after delivery. Remarque : Méthode d'essai de tension de charge : 15K/1S, Les échantillons initiaux doivent être testés dans les 30 jours suivant la livraison	Open Circuit Voltage(V) Load voltage(V) Tension en circuit ouvert (V) Tension de charge (V) Initial: 3.10-3.50 3.0-3.40 Initiale: 3,10-3,50 3,0-3,40 12 months @ RT: 3.0-3.40 3.0-3.40 12 mois @ RT: 3.0-3.40 3.0-3.40
5.2.2	Service output Sortie de service	Load resistance:15kΩ; Résistance à la charge :15kΩ; Discharge method:24h/d continuously discharge; Méthode de décharge :24h/j décharge continue; End point voltage 2.0V Tension de point d'arrêt 2.0V Remark: The initial samples shall be tested within 30 days after delivery. Remarque : Les échantillons initiaux doivent être testés dans les 30 jours suivant la livraison.	Initial≥750hrs Initiale≥ 750hrs 12 months @ RT≥720hrs 12 mois @ RT≥720hrs
5.2.3	Temperature characteristics Caractéristiques de température	Load resistance:15kΩ; Résistance à la charge :15kΩ; Discharge method:24 hrs/d continuously discharge;Méthode de décharge : 24 hrs/d décharge continue ; End point voltage 2.0V Tension de point d'arrêt 2.0V	0±2℃≥650hrs 60±2℃≥735hrs

5.2.4	Over-Discharge Surdécharge	Continuously discharge: 15KΩ, Décharge continue : 15KΩ, End point voltage 1.2V Tension de point d'arrêt 1.2V	No leakage, No deformation; Pas de fuite, pas de déformation; N=9, Ac=0, Re=1
5.2.5	High temp. Storage Stockage en température élevée.	60℃, RH below 70% for 30days 60℃, RH en dessous de 70% pendant 30jours	No leakage; Aucune fuite; N=40, Ac=0, Re=1
5.2.6	Short circuit test Test en circuit court	The battery short circuit in 55 ℃ environment, When the battery shell after the temperature dropped to 55 ℃ continue to short circuit at least 1 hrs Le court-circuit de la batterie dans un environnement de 55 ℃ , Lorsque la coque de la batterie après la température est tombée à 55 ℃ continuer à court-circuiter au moins 1 heure	No explosion、No fire ; Pas d'explosion, pas d'incendie; N=5, Ac=0, Re=1.

5.2.2&5.2.3 acceptance standard: norme d'acceptation

- 1) 9 pieces of battery will be tested for each discharging method.
9 batteries seront testés pour chaque méthode de déchargement
- 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.
Le temps de décharge moyen de chaque méthode de déchargement doit être égal ou supérieur au chiffre spécifié, et pas plus d'une batterie a une sortie de service inférieure à 80% du chiffre spécifié
- 3) One retest is allowed to confirm the results if the first test didn't meet the requirements.\
Un nouveau test est autorisé à confirmer les résultats si le premier test ne répondait pas aux exigences.

5.3 Expiration date Date d'expiration

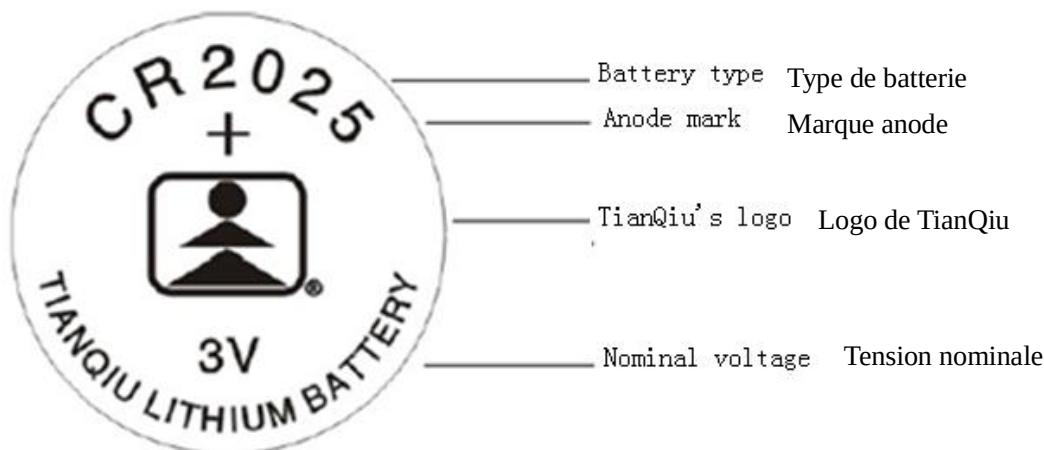
1 year storage in the conditions of GB/T 8897.1-2013, appendix E part
Stockage d'un an dans les conditions de GB/T 8897.1-2013, partie annexe E

6. Packing and marking *Emballage et marquage*

6.1 Marking Design Conception de marquage

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:

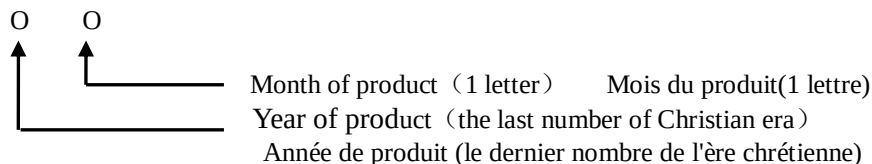
Toutes les exigences spécifiques en matière de conception et d'emballage seront prises en compte au besoin. Mais en général, les marques suivantes seront imprimées, estampillées ou imprimées sur le corps de la batterie :



6.2 date code code de date

Manufacturing marks: the year and month of product shall be marked on the negative (-) terminal side.

Marques de fabrication : l'année et le mois du produit doivent être marqués du côté négatif (-) terminal.



Example: Exemple

69 (manufactured in September, 2016)

69 (fabriqué en septembre 2016)

6X (manufactured in October, 2016)

6X (fabriqué en octobre 2016)

6Y (manufactured in November, 2016)

6Y (fabriqué en novembre 2016)

6Z (manufactured in December, 2016)

6Z (fabriqué en décembre 2016)

Month of product:

Mois de produit:

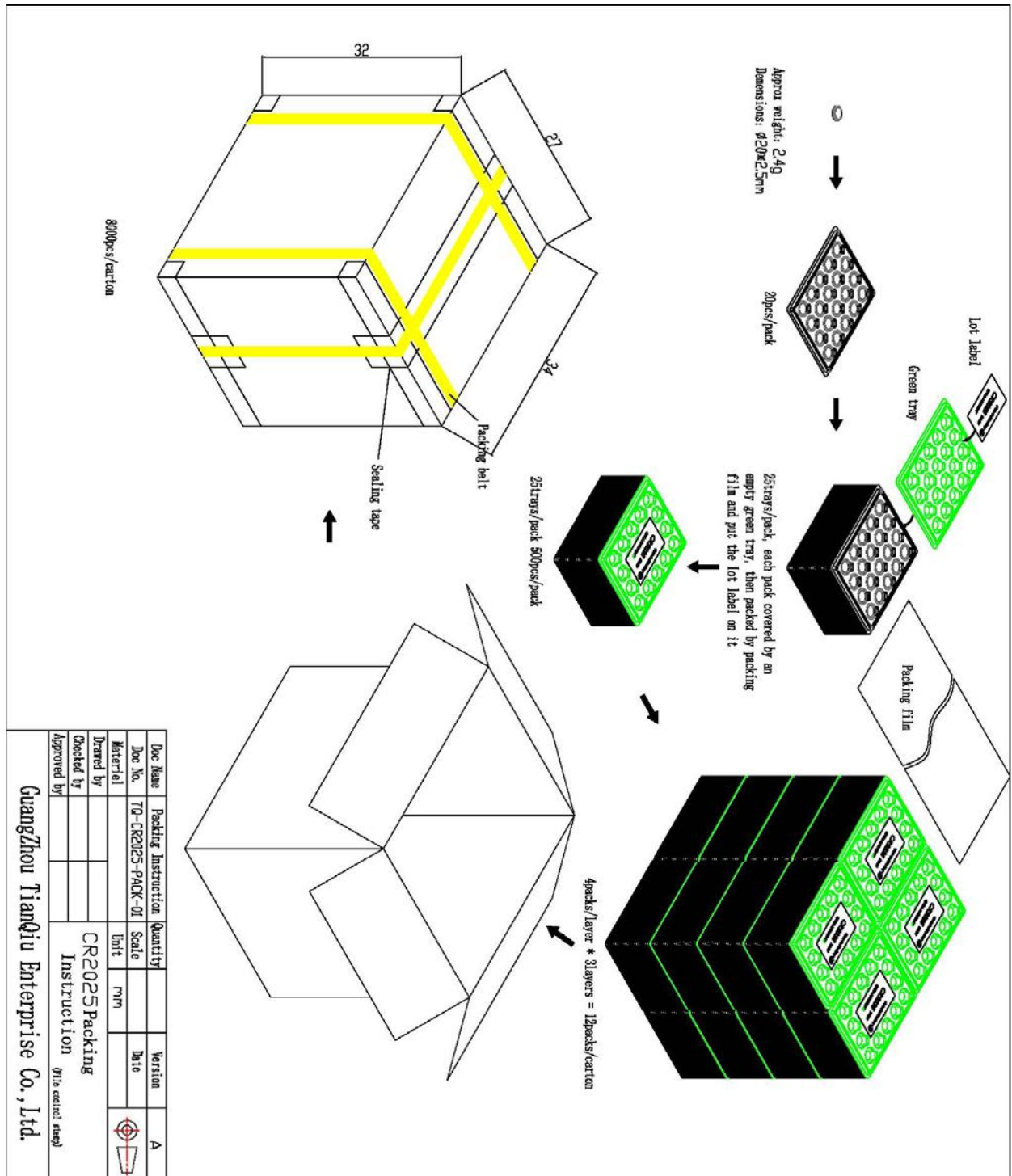
January to September..... (1-9)

Janvier à septembre..... (1-9)

Oct, Nov, Dec..... (X,Y,Z)

Oct, Nov, Dec..... (X,Y,Z)

6.3 Packing Picture Image d'emballage



7. Caution for Use Précaution d'utilisation

- 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.
Étant donné que la batterie n'est pas conçue pour être chargée, il y a des risques de fuite d'électrolyte ou de dommages à l'appareil si la batterie est chargée.
- 2) The battery shall be installed with its "+" and "-" polarity in correct position, otherwise may cause the battery to be charged or over-discharged.
La batterie doit être installée avec la polarité "+" et "-" en position correcte, sinon il peut être chargée ou surchargée.
- 3) Short-circuiting, heating, disposing of in fire and disassembling the battery are prohibited.
Le court-circuit, le chauffage, l'élimination du feu et le démontage de la batterie sont interdits.
- 4) Battery cannot be forced discharge, which lead to excess internal gas generation and, may result in bulging, leakage and explosion.
La batterie ne peut pas être déchargée forcée, ce qui entraîne une production de gaz interne excédentaire et peut entraîner un gonflement, des fuites et une 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.
Les batteries neuves et usagées ne peuvent pas être mélangées utilisées en même temps, lorsqu'elles sont remplacées, il est recommandé de remplacer tous et avec le même type de marque.
- 6) Exhausted batteries should be removed from compartment to prevent over-discharge, which cause leakage and damage to the device.
Les batteries épuisées doivent être retirées du compartiment pour éviter une surdécharge, ce qui cause des fuites et des dommages à l'appareil.
- 7) Direct soldering is not allowed, which will damage the battery.
La soudure directe n'est pas autorisée, ce qui endommagera la batterie.
- 8) Keep the battery out of the reach of children to prevent swallow, in case of accident should contact physician at once.
Gardez la batterie hors de la portée des enfants pour prévenir l'avalier, en cas d'accident doit contacter le médecin à la fois.
- 9) The battery should not be dismantled and deformed.
La batterie ne doit pas être démontée et déformée.

caution: attention

- » If a battery is leakage and materials contact eyes, flush immediately with running water for at least 15 minutes. Consult an ophthalmologist at once.
- » Si une batterie est une fuite et que les matériaux contactent les yeux, rincer immédiatement avec de l'eau courante pendant au moins 15 minutes. Consultez immédiatement un ophtalmologiste.
- » 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.
- » Si la batterie émet une odeur, une échauffement, une décoloration, une déformation ou tout phénomène anormal apparu dans le processus d'utilisation/stockage, a retiré la batterie immédiatement de l'appareil et de disposer de la batterie.

8. Referenced Standards Normes référencées

IEC 60086-1:2015 –Primary Batteries –Part 1: General

IEC 60086-1:2015 –Batteries primaires–Partie 1 : Général

IEC 60086-2:2015–Primary Batteries –Part 2: Physical and electrical specifications

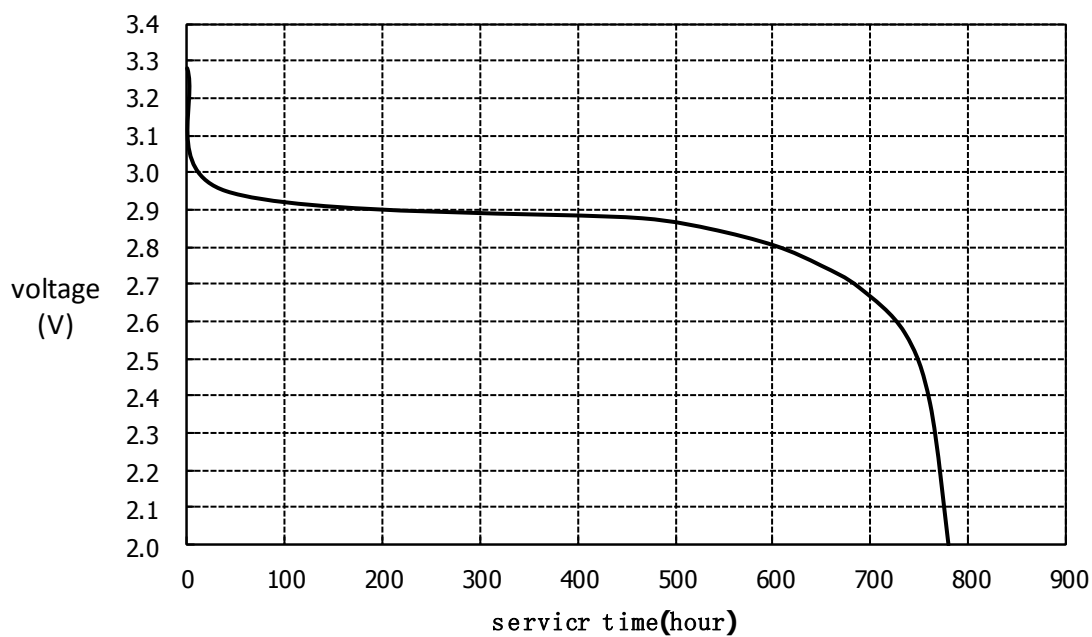
IEC 60086-2:2015–Batteries primaires–Partie 2 : Spécifications physiques et électriques

IEC 60086-4:2014 –Primary Batteries –Part 4: Safety of lithium batteries

IEC 60086-4:2014 –Batteries primaires–Partie 4 : Sécurité des batteries au lithium

9. Discharge Curves

Courbes de décharge



Discharge method: 15K Ω , 24 hours/day EV 2.0V

Méthode de décharge: 15K Ω , 24 heures/jour EV 2.0V

temperature of 20 $\pm$ 2 $^{\circ}$ C
température de 20 $\pm$ 2 $^{\circ}$ C



SAFETY DATA SHEET

Reference No..... : WTX23X09209258B
Applicant..... : ZHONGSHAN YONGYUAN ELECTRONIC TECHNOLOGY CO.,LTD
Address..... : Zhongshan Gangkou Town Meijing Road 5#
Manufacturer..... : ZHONGSHAN YONGYUAN ELECTRONIC TECHNOLOGY CO.,LTD
Address..... : Zhongshan Gangkou Town Meijing Road 5#
Sample's name..... : Alkaline battery
Date of Issue..... : 2023-09-27
Test Report Form No..... : WBB-SDS-02A



Prepared By:
Waltek Testing Group (Shenzhen) Co., Ltd.

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Emma Wang

Compiled by

[Signature]

Approved by



Safety Data Sheet

Section 1- Identification of the Substance/Preparation and of the Company/Undertaking

Product Name:	Alkaline battery
Model No.:	LR03
Brand:	Permanently
Ratings	1.5V
Weight:	Approx.9.0g
Manufacturer:	ZHONGSHAN YONGYUAN ELECTRONIC TECHNOLOGY CO.,LTD
Address:	Zhongshan Gangkou Town Meijing Road 5#
Emergency Telephone:	18928126958
Fax:	0760-88480989
Email:	yongyuandianchi@qq.com

Section 2-Hazards Identification

Classification	This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29CFR 1910.1200) this product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.
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Skin corrosion/irritation	See section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns
Serious eye damage/eye irritation	The steam of the electrolyte may stimulate eyes. Especially, substance that may cause inflammation of the eyes is contained
Skin sensitization	The leakage of the electrolyte may cause sore and stimulation on the skin
Carcinogenicity	Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation
Specific target organ toxicity (repeated)	Swallowing is not anticipated due to the battery size. The ingestion of the electrolyte causes tissue damage to throat

GHS Label elements, including precautionary statements

Emergency Overview

Signal word: Danger
Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause cancer



This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold.

Intended use of the product should not result in exposure to the chemical substance. This is a battery. In case of rupture: the above hazards exist.

Appearance: Various

Physical State: Solid

Odor: No odor

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (repeated exposure) Category	Category 1
Flammable liquid and vapor	Category 3

Precautionary Statements - Prevention	Obtain special instructions before use Do not handle until all safety precautions have been read and understood Use personal protective equipment as required Wash face, hands and any exposed skin thoroughly after handling Contaminated work clothing should not be allowed out of the workplace Wear protective gloves Do not breathe dust/fume/gas/mist/vapors/spray Do not eat, drink or smoke when using this product
Precautionary Statements - Response	IF exposed or concerned: Get medical advice/attention Specific treatment (see supplemental first aid instructions on this label) IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention IF ON SKIN: Wash with plenty of soap and water Take off contaminated clothing and wash before reuse If skin irritation or rash occurs: Get medical advice/attention
Precautionary Statements - Storage	Store locked
Precautionary	Dispose of contents/container to an approved waste disposal plant



Statements - Disposal	
Hazards not otherwise classified (HNOC)	Not applicable
Unknown Toxicity Other	31.6% of the mixture consists of ingredient(s) of unknown toxicity
Other information	May be harmful if swallowed. Very toxic to aquatic life with long lasting effects. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons
Interactions with Other Chemicals	No information available.

Section 3 – Composition/information on Ingredient

Pure ☐ Admixture ☒

Chemical Name	CAS Number	Weight-%	Trade Secret
Manganese Dioxide	1313-13-9	36	---
Steel	12597-69-2	25	---
Zinc Powder	7440-66-6	18	---
Water	7732-18-5	9	---
Potassium Hydroxide	1310-58-3	7	---
Graphite	7782-42-5	5	---

* The exact percentage (concentration) of composition has been withheld as a trade secret.

Section 4 – First Aid Measure

General Advice	First aid is upon rupture of sealed battery. Eye contact: If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub affected area. Skin contact: Wash off immediately with soap and plenty of water for at least 15 minutes. In the case of skin irritation or allergic reactions see a physician. May cause an allergic skin reaction. Inhalation: Remove to fresh air. If symptoms persist, call a physician. Get medical attention immediately if symptoms occur. Ingestion: Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician. Self-protection of the first aider: Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear personal protective clothing (see section 8).
Most important symptoms and effects, both acute and	Most important symptoms and effects: Itching. Coughing and/ or wheezing.



delayed	
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Section 5 – Fire Fighting measures

Suitable extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing Media	CAUTION: Use of water spray when fighting fire may be inefficient.
Specific Hazards arising from the chemical	Product is or contains a sensitizer. May cause sensitization by skin contact.
Hazardous Combustion Products	Carbon
Explosion Data	Sensitivity to Mechanical Impact: No. Sensitivity to Static Discharge: No.
Protective Equipment and precautions for firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6 – Accidental Release Measures

Personal Precautions, protective equipment, and emergency procedures	Personal Precautions: Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Other Information: Refer to protective measures listed in Sections 7 and 8.
Environmental Precautions	Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so.
Methods and material for containment and cleaning up	Methods for Containment: Prevent further leakage or spillage if safe to do so. Methods for cleaning up: Pick up and transfer to properly labeled containers.

Section 7 – Handling and storage

Precautions for safe handling	Handling: In case of rupture. Use personal protection equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Do not breathe dust/fume/gas/mist/vapors/spray.
Conditions for safe storage, including any incompatibilities	Storage: Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Products: Strong acids. Strong oxidizing agents. Strong bases.



Section 8 – Exposure controls, Personal Protection

Control parameters

Exposure Guidelines

Exposure Guidelines	ACGIH TLV	OSHA PEL	NIOSH IDLH
No information is available	---	---	---
No information is available	---	---	---
No information is available	---	---	---
No information is available	---	---	---

*ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value
 PEL: Occupational Safety and Health Administration - Permissible Exposure Limits
 NIOSH IDLH
 Immediately Dangerous to Life or Health

Other Exposure Guidelines

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962

(11th Cir., 1992) See section 15 for national exposure control parameters

Appropriate engineering controls	Engineering Measures: Showers Eyewash stations Ventilation systems.
Individual protection measures, such as personal protective equipment	Eye/Face Protection: If splashes are likely to occur: Wear safety glasses with side shields (or goggles). None required for consumer use. Skin and Body Protection: Wear protective gloves and protective clothing. Long sleeved clothing. Impervious gloves. Respiratory Protection: No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product.

Section 9 – Physical and Chemical Properties

Physical Properties	Physical	
	Appearance: Various	
	Odor: No odor	
	Physical	
	Odor Threshold: No information available.	
Chemical Properties:		
Property	Values	Remarks/ Method
pH	No data available	None known
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	No data available	None known
Evaporation Rate	No data available	None known



Flammability (solid, gas)	No data available	None known
Flammability Limit in Air	No data available	None known
Upper flammability limit	No data available	None known
Lower flammability limit	No data available	None known
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Specific Gravity	No data available	None known
Water Solubility	No data available	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	No data available	None known
Oxidizing Properties	No data available	None known

Other Information

Softening Point	No data available
VOC Content (%)	No data available
Particle Size	No data available
Particle Size Distribution	No data available

Section 10 – Stability and Reactivity

Reactivity:	No data is available
Chemical stability:	Stable under recommended storage condition
Possibility of Hazardous Reactions:	None under normal processing.
Hazardous Polymerization:	Hazardous polymerization does not occur.
Conditions to avoid:	None known based on information supplied.
Incompatible materials	Strong acids. Strong oxidizing agents. Strong bases.
Hazardous Decomposition Products:	Carbon oxides.

Section 11 – Toxicological Information

Information on likely routes of exposure

Product Information	Product does not present an acute toxicity hazard based on known or supplied information. In case of rupture:..
Inhalation	Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.
Eye Contact	Specific test data for the substance or mixture is not available. Expected to be an irritant based on components. Irritating to eyes. May cause redness, itching, and pain. May cause temporary eye irritation.
Skin Contact	Specific test data for the substance or mixture is not available. Expected to be an irritant based on components. Irritating to skin. Prolonged contact may cause redness and irritation.
Ingestion	Specific test data for the substance or mixture is not available. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component Information



Information on toxicological effects	Symptoms: Erythema (skin redness). May cause redness and tearing of the eyes. Itching. Rashes. Hives.
Delayed and immediate effects as well as chronic effects from short and long-term exposure	Sensitization: May cause sensitization of susceptible persons. May cause sensitization by skin contact. Mutagenic Effects: No information available. Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen

Chemical Name	ACGIH	IARC	NTP	OSHA
No information is available	---	---	---	---
No information is available	---	---	---	---
ACGIH (American Conference of Governmental Industrial Hygienists) A3 - Animal Carcinogen IARC (International Agency for Research on Cancer) Group 1 - Carcinogenic to Humans Group 2B - Possibly Carcinogenic to Humans Group 3 - Not Classifiable as to Carcinogenicity in Humans OSHA (Occupational Safety and Health Administration of the US Department of Labor) X - Present				

Reproductive Toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).
Chronic Toxicity	Contains a known or suspected carcinogen. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse liver effects.
Target Organ Effects	Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Central Vascular System (CVS). Kidney. Liver. Lungs. Heart.
Aspiration Hazard	No information available.

Numerical measures of toxicity Product Information

The values which are on the right are calculated based on chapter 3.1 of the GHS document.	ATEmix (oral): X ATEmix (dermal): X
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Section 12 – Ecological Information

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
No information is available	---	---	---	---

Persistence and Degradability	No information available.
Bioaccumulation	No information available.
Other adverse effects	No information available.

Section 13 – Disposal Considerations

Waste treatment methods

Disposal methods: This material, as supplied, is not a hazardous waste according to Federal regulations (40CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging: Dispose of in accordance with federal, state and local regulations.

California Hazardous Waste Codes 141

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste
No information is available	---
No information is available	---
No information is available	---
No information is available	---

Section 14 - Transport information

This report applies to transportation of by air or by sea or by road.

The transportation of Energizer Alkaline battery LR03 is regulated by the International Maritime Dangerous Goods Code.

When shipped by air, package should according to special provision A123 of IATA DGR 64th Edition for transportation.

When shipped by sea, package should according to special provision 304 of IMDG CODE 40-20 Edition for transportation.

When shipped by road, the Energizer Lithium battery is not subject to the Regulations Concerning the International Transport of Dangerous Goods by Rail (RID), should be 'Not Restricted'.

The US Hazardous Materials Regulation 49 CFR (Code of Federal Regulations), sections 173-185 Lithium batteries and cells.

Waltek Testing Group (Shenzhen) Co., Ltd.
<http://www.waltek.com.cn>



Section 15 – Regulatory Information

International Inventories

TSCA: Complies

DSL: All components are listed either on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No	Weight-%	SARA 313 – Threshold Values %
No information is available	---	---	---
No information is available	---	---	---
No information is available	---	---	---
No information is available	---	---	---

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
X No information is available	---	---	---	---

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
No information is available	---	---	---
No information is available	---	---	---

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
No information is available	---

**U.S. State Right-to-Know Regulations**

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
No information is available	---	---	---	---	---
No information is available	---	---	---	---	---
No information is available	---	---	---	---	---
No information is available	---	---	---	---	---
No information is available	---	---	---	---	---

International Regulations**Mexico****National occupational exposure limits**

Component	Carcinogen Status	Exposure Limits
No information is available	---	---
No information is available	---	---

Mexico - Occupational Exposure Limits - Carcinogens

Canada**WHMIS Hazard Class**

Non-controlled

Section 16 – Additional Information

NFPA	Health Hazards 1	Flammability 0	Instability 0	Physical and Chemical Hazards - Personal Protection X
HMIS	Health Hazards 0	Flammability 0	Physical Hazard 0	

Revision Date: X**Revision Note:** No information available**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

===== End of Report =====

无锡市诺雷电池有限公司
WUXI NORAN BATTERY CO.,LTD.

产 品 规 格 书
PRODUCT SPECIFICATION
碱性锌锰电池
ALKALINE ZINC-MANGANESE BATTERY

LR03-AAA-1.5V

文件编号: NR-JS-LR03-A

版 本: C

发行日期: 2024-03-22

制 作: _____

核 准: _____

无锡市诺雷电池有限公司

地址: 无锡市惠山区前洲镇堰玉中路 10 号

产品规格书 TECHNICAL SPECIFICATION

1.简介/About

诺雷碱性电池 REIDEN ALKALINE BATTERY

型号 Model# : LR03 / AAA / AM-4

化学成分 Chemical system: Zn/KOH—H₂O/MnO₂ 碱性锌锰

标称电压 Nominal voltage: 1.5V

近似重量 Approx. weight: 11.5g

电池外壳 Jacket: 仿金属铝膜 Aluminum Foil Jacket

参考标准 Reference :

IEC 60086-1:2000 ...Primary Batteries-Part1:General

IEC 60086-2:2000 ...Primary Batteries-Part2:Physical and Electrical Specification

GB/T 7112-1998 ...Zinc-Manganese Dry Batteries of R03,R1,R6,R14and R20

Alkaline Zinc-Manganese Dry Batteries of LR03,LR1,LR6,LR14and LR20

重金属含量 Heavy Metal Contents: 无汞无镉 Mercury and Cadmium Free

2.额定值/Ratings

额定电压/Nominal Voltage		1.5V
使用温度范围 Temperature Range for operation	标准温度 Standard Temperature	20℃±2℃
	专用温度 Special Temperature	30℃±2℃
	高温 High temperature	45℃±2℃
相对湿度范围 Humidity Range for Storage	标准相对湿度 Standard Humidity	45%~75%
	专用相对湿度 Special Humidity	35%~65%
尺寸 Dimension	直径/Diameter	10.05-10.25mm
	高度/Height	43.9-44.1mm
近似重量/Approx weight		11.5g

3.电 性 能/Electrical Characteristics

Battery status	开路电压 (V) Off-load voltage (V)	负荷电压 (V) On-load voltage (V)	短路电流(A) Short circuit current (A)	验收标准 Acceptance Standard
新 电 (30 天内) Initial within (30days)	1.62	1.55	11	GB2828 一般检验水 平 commonly sampling AQL=0.4
常 温 12 个月 After 12 months	1.59	1.49	9	

(条件: 负荷电压 3.9 Ω , 精度±0.5% , 测量时间 0.3 秒, 测量温度 20℃±2℃, 短路电流用指针式安培表, 精度±0.5% (0.5 级))。

Conditions:3.9 Ω ±0.5% load resistance, measuring time 0.3 seconds, temperature at 20℃ ±2℃, the hair spring type ampere meter with ±0.5% accuracy (0.5level) shall be used.

4. 放 电 性 能 Service Time

放 电 条 件 Discharge condition			最 小 平 均 放 电 时 间 Average minimum discharge time	
放电负载 Discharge load(Ω)	放电时间 Daily discharge	终止电压(V) End voltage (V)	新 电 (30 天内) Initial within 30 days	20℃ $\pm$ 2℃ 储存 12 个月 After 12months under 20℃ $\pm$ 2℃
3.9 Ω	24h/d	0.9	150min	140min
20 Ω	24h/d	0.9	18.1h	17.3h
10 Ω	1h/d	0.9	8.2h	7.5h
250mA	24h/d	0.9	2.8h	2.5h

容量: 1200mAh(标准温度下 25mA 恒流放电至 0.9V)

Capacitance:1200mAh (S.T. 25mA constant-current discharge to 0.9 V)

(验收标准: 每一种放电条件取 9 只电池进行放电。平均放电时间等于或大于规定值, 而且放电时间少于规定值的 80%的电池数不大于 1, 则认为电池的放电时间符合要求。)

(Inspect standard: discharge 9 sample-batteries for each condition. It passes when average discharge time is no less than Rated Time and the quantity of the batteries which the value is under 80% of Rated Value is no more than one)

5.耐漏液性能/Anti-leakage characteristic

项 目 Item	条 件 Condition	期 限 Period	特 性 Characteristics	验 收 条 件 Inspect standard
过放电耐漏性能 Over-discharge characteristics	10 Ω 连续放电, 温度: 20℃ $\pm$ 2℃, 相对湿度: 65 $\pm$ 20%RH 10 Ω continuous discharges at temp. 20℃ $\pm$ 2℃, relative humidity 65% $\pm$ 20%RH	48 h	电池变形不超出 电池尺寸上限或 没有漏液情况。	N=9 Ac=0 Re=1
贮存期耐漏性能 Storage characteristics	温度: 45℃ $\pm$ 2℃, 相对湿度: ,65%RH At temp. 45℃ $\pm$ 2℃, relative humidity 65%RH	90 days	no deformation exceeding the specified dimensions nor visible leakage	N=40 Ac=0 Re=1
	室 温 At room temp.	12 month		

6、安 全 性 能 Safty characteristic

项 目 Item	条 件 Condition	期 限 Period	特 性 Characteristics	验 收 条 件 Inspect standard
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短路性能 Short circuit characteristics	温度 Temp.: 20℃±2℃	24H	电池没有爆炸 There shall be no explosion	N=8 Ac=0 Re=1
反充电性能 Abuse characteristics	4 只电池串联, 其中 1 只极性相反。 Short circuit 4 pieces of battery in series, one of the batteries has to be connected with its polarity reversed	24H		

7. 标记 Marks:

在电池外标明以下内容:/The following marks will be printed or stamped on the batteries's body

- (1) 型号:/Model
- (2) 标称电压/Nominal Voltage
- (3) 极性/Pole
- (4) 警告/Warning
- (5) 生产日期/到有效期日期:Manufactured Date /Exp date

8、保存期限 Storage life

于常温及合适环境可储存 5 年 Under room temp and suitable environment, its shelf time is 5 years

9、放电曲线 Discharge Curves

终止电压 End Voltage: 0.90V

放电方式 Discharge Pattern: 24h/day

负载电阻 Load Resistance: 20 Ω

标准时间 Minimum Duration: 18.1hrs

