



MSDS SPECIFICATIONS and MATERIALS SAFETY DATA SHEET

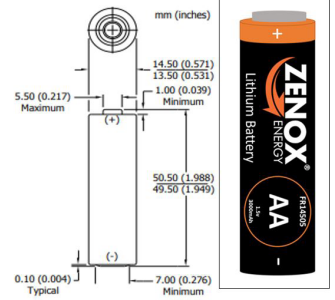
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PRIMARY BATTERY: AA
(FR14505)

(A) SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

Model	AA (FR14505)	Size	14.0mm x 50.5mm
Rated Capacity	3000mAh	Typical IR	120-240 mΩ (depends on method)
Nominal Voltage	1.5V	Lithium Content	0.9g
Max.continuous discharge current	2500mA	Dimension	AA / IEC / FR6 / L91
Max.Pulse discharge	4000mA (2 s on/8 s off)	Sizing Compatibility	FR14505 / L91 / FR6 / LR6 / R6 / E91 / AM3
Discharge cut-off voltage	0.8V	Shelf Life	20 Years
Operating Temperature	-40°C to +60°C	UN Number	3090
Storage/Shipping Temperature	-20°C to +40°C	Shipping Name	Lithium Metal Batteries
Weight	15.5g		



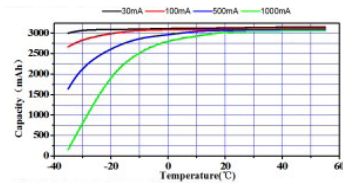
KEY FEATURES

- ** No Leakage, 3-layer safety and leak-proof design
- ** No explosion, safe lithium battery
- ** Long lasting, 20 years battery shelf life
- ** Performs in extreme temperatures, -40°C~+60°C
- ** Powers your most critical devices
- ** Spiral type, higher discharge current
- ** CE, ROHS, UN38.3, MSDS approved 2023

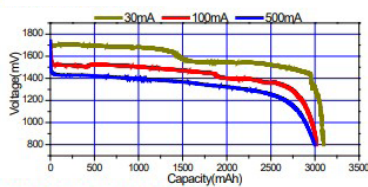
TYPICAL APPLICATIONS DATA

Application	Test Mode	Performance
Remote/Radio/Clock	50mA 1/8 hour(s) day	63.5 hours
Digital Audio	100mA 1 hour/day	30.0 hours
CD/Games	250mA 1 hour/day	12.5 hours
Toys	3.9Ω 1 hour/day	9.5 hours
Digital Camera	1500mW/650mW 2S/28S 5M/1H	505 cycles

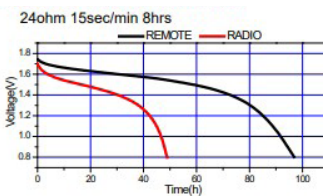
Capacity VS. Temperature



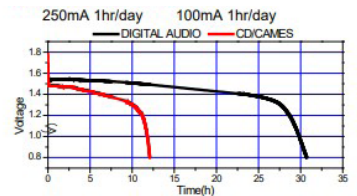
Voltage VS. Capacity



Application Tests: Remote Radio



Application Tests: CD/CAMES



WARNINGS

1. Fire, explosion and severe burn hazard;
2. Do not recharge, crush, disassemble, heat above 600C
3. Do not solder directly to the cell
4. Do not mix old and new batteries together

(B) MATERIAL SAFETY DATA SHEET (MSDS)

Section 1: PRODUCT IDENTIFICATION

Name:	Lithium AA Battery (FR14505)
Battery Type:	Small Size AA Battery - Non-Rechargeable
Battery Model Ref:	AA (FR14505)
Nominal Voltage:	1.5V
Rated Capacity:	3000mAh
Lithium Content:	0.9g
Weight:	15.5g
Size:	14.0mm x 50.5mm
Prepared by:	ZENOX Energy Company Limited

Section 2: HAZARD IDENTIFICATION

Primary Route of Exposure: Eyes, skin contact, ingestion.

Health Hazard: The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's a Hazard of rupture, fire, heat, leakage of internal components, which could cause casualty loss. Abuses including but not limited to the following cases: charged for a long time, short circuited, put into fire, whacked with hard object, punctured with acute object, crushed, and broken.

Section 3: COMPOSITION and INFORMATION on INGREDIENTS

Chemical Name	Concentration %	CAS Number
Iron	35.7	7439-89-6
Iron Sulfide Compound	30.6	1317-37-9
Polypropylene	2.5	9003-07-0
Organic Solvent	14.8	confidential
Lithium Salt	1.9	63676-96-0
Lithium	6.4	7439-93-2
Aluminum	8.1	7429-90-5
Cadmium	0 (not detected)	7440-43-9
Mercury	0 (not detected)	7439-97-6

Notes: Labelling according to EC Directives. No Symbol and Hazard Phrase required.

CAS = Chemical Abstract Service Registry Number

Section 4: FIRST AID MEASURES

Eye contact: Immediately flush eye with plenty of clean water for at least 15 minutes. Seek medical attention.

Skin contact: Immediately flush skin with plenty of clean running water for at least 15 minutes. Remove contaminated clothes. Seek medical attention.

Inhalation: Immediately move to fresh air. If necessary administer oxygen. Seek medical attention.

Ingestion: Do not induce vomiting or give food or drink. Seek medical attention immediately.

Section 5: FIRE FIGHTING MEASURES

Lithium-X (Class D extinguishing media) and dried sand are effective extinguishing media on fires involving lithium batteries.

Characteristics of Hazard: Dusts at sufficient concentrations can form explosive mixtures with air. Combustion generates toxic fumes.

Hazardous Combustion Products: Carbon Dioxide

Fire Extinguishing Methods & Media: For small fires, use water spray, dry chemical, carbon dioxide or chemical foam. Lithium-X (Class D extinguishing media) and dried sand are effective media on lithium battery fires.

Attention to Fire-extinguishing: Wear self-contained breathing apparatus in pressure-demand, MSHA/NIOSH approved and full protective gear.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures:

In case of rupture. Attention! Corrosive material. Avoid contact with skin, eyes and clothing. Always ensure adequate ventilation. Always use protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spills/leaks. Under abusive conditions, the battery contained materials may leak. Always put leaked batteries into small containers or plastic bags, adding neutralising agents of sodium carbonate (Na₂CO₃), chalk (CaCO₃) or lime (CaO) powder.

Environmental Precautions:

Always prevent the products from contaminating soil and from entering sewers or waterways.

Methods and Materials for Containment:

Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.

Method and Materials for Cleaning Up:

Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Always use appropriate protective equipment. Collect all contaminated absorbent and dispose of according to the directions in Section 13. Scrub area with detergent and water and collect all contaminated wash water for proper disposal.

Section 7: HANDLING AND STORAGE

Handling: The battery may explode or cause burns if disassembled, crushed, exposed to fire or high temperatures or abused in any way. Do NOT short or install with incorrect polarity.
Storage: Store in a cool, dry, well ventilated area away from incompatible substances. Store locked up and keep out of reach of children.
Other Precautions: In case of rupture. Handle in accordance with good industrial hygiene and safety practices. Avoid contact with skin, eyes or clothing. Use personal protection equipment.

Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls: Use adequate ventilation at all times to keep airborne concentrations low. If used under conditions that generate particulates, the ACGIH TLV-TWA of 3mg/m³ respirable fraction (10mg/m³ total) should be observed.

Personal Protective Equipment:

Eye and Face Protection: None required for consumer use. If there is a hazard of, or potential hazard of contact, always wear tightly seal-able safety goggles and a face protection shield.
Skin and Body Protection: None required for consumer use. If there is a hazard of, or potential hazard of contact, always wear tightly seal-able safety goggles and a face protection shield. In case of leakage, wear protective gloves.

Respiratory Protection: No protective equipment is required under normal use conditions. If exposure limits are exceeded or irritation is experienced, immediate ventilation and evacuation may be required. Also, as in the case of any fire situation, use self-contained breathing apparatus to protect respiration. In the event of leakages, wear protective chemical apron.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Appearance:	Cylindrical. Solid.
	Colour:	Black/Orange.
	Odour:	If leaked, smells of pungent corrosive odour, sometimes medical ether.
Condition Change:	pH:	Not Applicable as supplied.
	Flash Point:	Not Applicable unless individual components exposed.
	Flammability:	Not Applicable unless individual components exposed.
	Relative Density:	Not Applicable unless individual components exposed.
	Solubility (water):	Not Applicable unless individual components exposed.
	Solubility (other):	Not Applicable unless individual components exposed.

Section 10: STABILITY AND REACTIVITY

Chemical Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: None under normal processing.

Conditions to Avoid: Exposure to air or moisture over prolonged periods. Avoid force, dropping, crushing, disassembling, short-circuiting, re-charging, fire & heat above 100 C, incineration.

Incompatible Materials: Acids, Oxidizing agents, Bases.

Hazardous Decomposition Products: Carbon Oxides. Reaction of lithium metal with water: Hydrogen (H₂)/Lithium Oxide (Li₂O) and Lithium Hydroxide (Al(OH)₃).

Section 11: TOXICOLOGICAL INFORMATION

Irritation: In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin. May cause redness, tearing, burns to eye and skin and irritation to respiratory system.

Medical conditions generally aggravated by exposure: Eczema, skin allergies, lung injuries, asthma, other respiratory disorders.

Sensitization: Not Available.

Reproductive Toxicity: Not Available

Toxicologically Synergistic Materials: Not Available.

Section 12: ECOLOGICAL INFORMATION

General Note1: Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage systems.

Anticipated behaviour of a chemical product in environment/possible environmental impact/ecotoxicity: Not Available.

Section 13: DISPOSAL

Waste Treatment: Recycle or dispose of in accordance with government, state and local regulations.

Important Note1 - Attention for waste disposal: Deserted batteries should not be treated as ordinary waste. They should NOT be thrown into fires or placed in high temperatures. They should NOT be dissected, pierced or crushed.

Important Note2: Deserted batteries should only be disposed of/cycled by and at permitted waste disposal treatment sites.

Section 14: TRANSPORTATION

UN Number: UN 3090

UN3090: Lithium Metal Batteries

Note1: Lithium metal cells and batteries are considered as Dangerous Goods with UN3090 and/or UN3091.

Note2: Depending on the lithium metal content, some cells or batteries may be regarded as non-dangerous goods without Class 9 nomination.

Shipping Name: Lithium metal batteries (including lithium alloy batteries)

Labels/Placard Required: Lithium Batteries Mark, Class 9 Hazard Label, Cargo Aircraft Only Label.

Regulations:

ICAO/IATA: Can be shipped by air in accordance with International Civil Aviation Organisation (ICAO), TI or International Air Transport Association (IATA), DGR Packing Instructions (PI) 968

Section 1B appropriate of IATA DGR 64th (2023 Edition) for transportation.

IMDG CODE: The batteries are not restricted to IMDG Code 2020 Edition (Amdt 40-20) according to special provision 188.

DOT: Other requirements for US Department of Transportation (DOT) SubChapter C, Hazardous

Materials Regulations if shipped in compliance with 49 CFR 173.185.

ADR/ADN: The batteries are not subject to the provisions of the United Nations Economic

Commission for Europe (UNECE) ADR/AND if they meet the requirements of special provision 188 of Chapter 3.3, applicable as from 1st January 2023.

Note 1: In addition, to be permitted in transport each lithium cell and battery types must have passed the applicable tests set out in Subsection 38.3 of the UN Manual of Tests and Criteria.

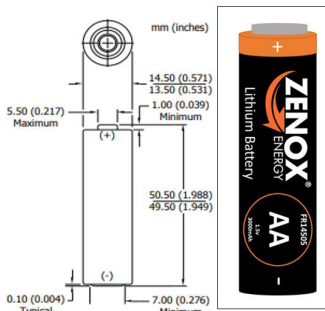
Section 15: REGULATORY INFORMATION

Relevant Regulations and References:

- * Dangerous Goods Regulations;
- * Recommendations on the Transport of Dangerous Goods - model regulations, 22nd edition (revised).
- * Recommendations on the Transport of Dangerous Goods - Manual of Tests & Criteria;
- * International Air Transport Regulations (IATA).
- * International Maritime Dangerous Goods Regulations (IMDG Code 2020 Edition Amdt 40-20).
- * Technical Instructions for the Safe Transport of Dangerous Goods.
- * Classification and Codes of Dangerous Goods (GB6944-2012).
- * 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).
- * Toxic Substance Control Act (TSCA).
- * Code of Federal Regulations.
- * In accordance with all federal, state & local laws.

Section 16: ADDITIONAL INFORMATION - MSDS Creation Date: 2023 Version: 1.0

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