

Report No.: HL20140224CE01

MSDS REPORT

NAME OF SAMPLE: Lithium metal battery

CLIENT: GUANGZHOU HUALI BATTERY CO., LTD

CLASSIFICATION OF TEST: Commission test

Guangzhou MCM Certification and Testing Co., Ltd



General Information

Name of Sample:

Lithium metal battery

Type:

CR1/3N, CR2, CR123A, CR14250, CR17450

Trade mark:

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UN38.3 Test Report Number:

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Commissioner:

GUANGZHOU HUALI BATTERY CO., LTD

Commissioner address:

70 INDUSTRIAL RD LIANHUASHAN PANYU GUANGZHOU GUANGDONG P.R. CHINA

Manufacturer:

GUANGZHOU HUALI BATTERY CO., LTD

Manufacturer address:

70 INDUSTRIAL RD LIANHUASHAN PANYU GUANGZHOU GUANGDONG P.R. CHINA

Sample Receiving Date:

Feb .24, 2014

Complete Date:

Feb. 25, 2014



Seal

Date of issue:Feb.25,2014

Approved by: Xu Hongbin

Reviewed by: Liang Hongcheng

Tested by: Fu Ziwen

Material Safety Data Sheet

SECTION 1 - CHEMICAL PRODUCT AND COMPANY

IDENTIFICATION

Name of Sample: Lithium metal battery	Type: CR1/3N, CR2, CR123A, CR14250, CR17450
Company Name: GUANGZHOU HUALI BATTERY CO., LTD	Address: 70 INDUSTRIAL RD LIANHUASHAN PANYU GUANGZHOU GUANGDONG P.R. CHINA
Zip code: 510440	Fax: 020-84862630
E-mail: zxf@vattnic.com	Emergency Telephone: 020-84861603

SECTION 2 – HAZARDS IDENTIFICATION

Preparation hazards and classification:

When the battery is In extreme pressure deformation, high-temperature environment, overload, short-circuit condition, or disassemble the battery, an explosion of fire and chemical burn hazards may occur.

Apperance, Color, and Odor:

Solid object with no odor, no color.

Primary Route(s) of Exposure:

These chemicals are contained in a sealed stainless steel enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact

Potential Health Effects:

ACUTE (short term): 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.

CHRONIC (long term): see Section 11 for additional toxicological data

Medical Conditions Aggravated by Exposure:

Not applicable

Reported as carcinogen:

Not applicable

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENT

Chemical Name	Molecular formula	CAS No.	Weight (%)
Lithium	Li	7239-93-2	3.0-4.0
Carbon	C	7782-42-5	2.0-3.0
Manganese Dioxide	MnO ₂	1313-13-9	35.0-45.0
Aluminum	Al	7429-90-5	2.0
1,2-Dimethoxyethane	C ₄ H ₁₀ O ₂	110-714-4	7.0
Propylene Carbonate	C ₄ H ₆ O ₃	108-32-7	7.0
Lithium perchlorate	LiClO ₄	7791-03-9	1.0-1.5
Polypropylene	(C ₃ H ₆) _n	9003-07-0	3.0
Polytetrafluoroethene	(C ₂ F ₄) _n	9002-84-0	5.0
Ferrum	Fe	7429-90-5	2.0
Nickel	Ni	7440-02-0	1.0

Abbreviation: CAS No. is Chemical Abstract Service Registry Number, N/ A= Not apply.

SECTION 4 – FIRST AID MEASURES

Eye

If the battery is leaking and the contained material contact the eyes, do not rub the eyes and flush the eyes with plenty of water or saline water at least 15 minutes, get medical aid at once.

Skin

If the battery is leaking and the contained material contact the skin, Remove contaminated clothes quickly and rinse the skin with plenty of water at least 15minutes, if irritation or pain persist ,get medical aid at once

Inhalation

If the battery is leaking, remove to fresh air immediately, Keep the respiratory tract smooth. Use oxygen if available .Get medical aid

Ingestion

If the battery is leaking and the contained material is ingest, rinse mouth and surrounding area with clear water at once .Get medical aid at once.

SECTION 5 – FIRE FIGHTING MEASURES

Danger characteristic:

Exposure to excessive heat can cause venting of the liquid electrolyte. Battery may burst and release hazardous decomposition products when exposed to a fire situation.

Hazardous combustion products:

Corrosive gas may be emitted during fire.

Fire-Fighting method& media

The stuff must equip with filtermask (full mask) or isolated breathing apparatus. The stuff must wear the clothes which can defense the fire in the upwind direction. Remove the container to the open space as soon as possible .Spray water on the containers in the fireplace to keep them cool until finish extinguishment Media: plenty of water , dry chemical powder or carbon dioxide .

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Emergency treatment:

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area and allow the batteries to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate waste.

SECTION 7 – HANDLING AND STORAGE

Handling:

1. Do not allow battery terminates to contact each other, or contact with other metals.
2. Do not put the cell or battery into a fire or heat it. Do not solder the cell directly. Do not use or leave the cell or battery in a place near fire or heaters.
3. Do not expose the battery to excessive physical shock or vibration.
- 4 Do not immerse, throw, and wet a battery in water.
- 5 Short-circuiting should be avoided. Short circuit will reduces the life of the battery and can lead to ignition of surrounding materials. Physical contact with to short- circuited battery can cause skin burn.
6. The batteries should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container.
7. Place the cell beyond the child packing and container.
8. Do not connect the battery directly to an electric outlet or cigarette socket in a car.
9. Be sure to use the specified charger for battery, and follow the charging instructions correctly.
10. Do not mix old and new batteries together, neither with Ni-Cd, dry batteries or another manufacturer batteries or product.

Storage:

1. Batteries should be separated from other materials and stored in a noncombustible, well ventilated, sprinkler-protected structure with sufficient clearance between walls and battery stacks.
2. Keep the sample in the cool, dry and well-ventilated place(temperature:-20~30degree C humidity:45~85%). Do not exposure to direct sunlight for long periods. Keep away from fire and heating sources. Don't keep the samples with oxidizer and acid.
3. charge the battery every 6 months to the amount specified by the manufacture, even if the battery is not used.
4. Equip with relevant types and quantities of the extinguishment instruments. The storage place should be equipped with suitable shelter materials for divulgence handling.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Maximum admissible concentration:

No standard yet

Monitoring Method: /
Engineering Control: Keep away from heat and open flame. Supply with sufficient partial air exhaust. Store in a cool, dry place.
Respiratory Protection: Not necessary under conditions of normal use. Wear self-contained breathing filtermask if the density exceed in the air. Wear breathing apparatus under the condition of emergency rescue or evacuation.
Eyes Protection: Not necessary under conditions of normal use. Wear protective glasses if handling a leaking or ruptured battery.
Body Protection: Not necessary under conditions of normal use. Wear fireproofing, gas defense clothes in case of handling a leaking or ruptured battery.
Hands Protection: Not necessary under conditions of normal use. Wear chemical resistant rubber .
Other Protections: No smoking, dining and drinking water in the workplace. Keep good habit of hygiene.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Physical state: solid . Form: cylindrical or prismatic or prismatic(laminated)
Odour: Odourless
Flash Point: No specific data.
Boiling Point: No specific data.
Melting Point: No specific data.
Proportion: No specific data.
Acid Value: No specific data
PH Value: No specific data.
Density: No specific data.
Permission of solvent inhalation: No specific data.
Ignition temperature: No specific data.
Solubility: Insoluble in water.

SECTION 10 – STABILITY AND REACTIVITY

Stability:

Stable under normal temperature and pressure.

Distribution of Ban:

strong oxidizer, strong acid and corrosives

Conditions to Avoid:

Fire source, heating source, disassemble, external short circuit, crushes, deformation, high temperature above 100 degree C, direct sunlight and high humidity, immerse in water or overcharge.

Hazardous Polymerization:

No specific data.

Hazardous Decomposition Products:

N/A

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity:

N/A

Sub-acute and Chronic Toxicity:

N/A

Irritation:

Electrolyte containing LiPF₆ and organic solvents has a small amount of toxicity and may cause irritation of the skin or eyes. Released gas may also cause irritation of skin or eyes.

Sensitization:

Lithium transition metal oxidate-Li(M)m(O)n: the nervous system of respiratory organs may be stimulated sensitively

Copper: Sensitization of the skin may be caused by the long-term or repetitive contact.

Mutagenicity: No information is available.

Carcinogenicity: No information is available.

Others: Since the materials in this battery are sealed in the can, the potential for exposure to the components of the battery is negligible, when the battery is used as directed. However technical or electrical abuse of the battery may result in the release of battery contents.

SECTION 12 – ECOLOGICAL INFORMATION

Eco-toxicity: No information is available.

Biodegradable: No information is available.

Non-biodegradable: No information is available.

Bioconcentration or biological accumulation: No information is available.

Other harmful effects: Don't abandon the battery into environment, may cause water or soil pollution.

SECTION 13 - DISPOSAL CONSIDERATIONS

Nature of waste: /

Waste disposal methods: Refer to National or Local regulations before handling. Disposal of the battery should be performed by permitted, professional disposal firms knowledgeable in National or Local regulations of hazardous waste treatment and hazardous waste transportation.

Attention abandoned: the battery should be completely discharged prior to disposal in order to prevent short circuit. The battery contains recyclable materials. It is suggested recycle.

SECTION 14 – TRANSPORT INFORMATION

Hazard Classification: Class 9(it can be shipped as unlimited goods if batteries are conform to UN 38.3 and the gross of each package is not more than 10kg and suffer from 1.2m drop test.)

UN Number: 3490/3491

Packaging Mark: /

Packaging: /

Transport Attentions: This report applies to by sea, by air and by land;

The Lithium metal battery (model: CR1/3N, CR2, CR123A, CR14250, CR17450) tested according to the requirements of the UN manual of tests and Criteria, Part III, subsection 38.3;

The Li-ion Battery according to Section II/Section IB of PACKING INSTRUCTION 968, or Section II of PACKING INSTRUCTION 969~970 of the 2014 IATA Dangerous Goods regulations 55th Edition may be transported. and applicable U.S. DOT regulations for the safe transport of Li-ion Battery.

Lithium metal battery was protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit;

Cell and batteries offered for transport must be packed in inner packaging's that completely enclose the cell or battery; to provide protection from damage or compression to the batteries, the inner packaging's must be placed in a strong rigid outer packaging;

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

The package must be handled with care and that a flammability hazard exists if the package is damaged;

Each package must be labeled with a Rechargeable Lithium-ion Polymer Battery handling label or in addition to the Class 9 hazard label.

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions.
- The International Air transport Association (IATA) Dangerous Goods Regulations. UN number of lithium battery: UN3480 or UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous; Marine pollutant(Y/N): N;

- The International Maritime Dangerous Goods (IMDG) Code.

For lithium-ion batteries by sea, provided that packaging is strong and prevent the products from short-circuit.

UN number of lithium battery: UN3490 or UN3491;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous; Marine pollutant(Y/N): Y;

Special Provision: International maritime dangerous goods code (IMDG) 188, 230, 310, 348, 957;

- The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA

- The Office of Hazardous Materials Safety within the US Department of Transportations' (DOT) Research and Special Programs Administration (RSPA)

SECTION 15 – REGULATORY INFORMATION

Law Information

ISO 11014-2009: Safety data sheet for chemical products - Content and order of sections. Regulation (EC) No 1272/2008: Classification, Labelling and Packaging of Substances and Mixtures. International Air Transport Association (IATA) Dangerous Goods Regulations, 55th Edition .
The International Maritime Dangerous Goods (IMDG) Code (inc Amdt 36-12).

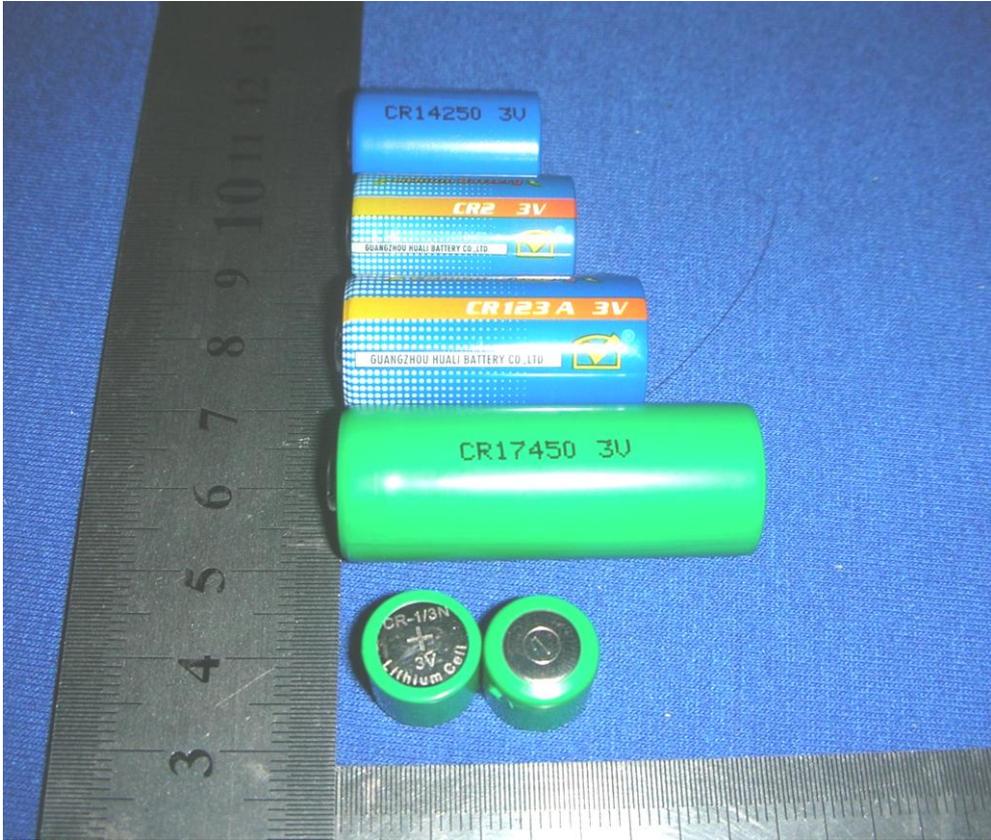
SECTION 16 – ADDITIONAL INFORMATION

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier, nor any its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Sample Reference Photo

Model: CR1/3N, CR2, CR123A, CR14250, CR17450



Important

1. The test report is invalid without the official stamp and Paging seal of Guangzhou MCM Certification and Testing Co., Ltd.
2. Nobody is allowed to photocopy or partly photocopy this test report without written permission of Guangzhou MCM Certification and Testing Co., Ltd.
3. The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.
4. The test report is invalid if altered.
5. Objections to the test report must be submitted to Guangzhou MCM Certification and Testing Co., Ltd. Within 15 days.
6. The test report is valid for the tested samples only.
7. As for the test result, "N" means "not applicable", "P" means "pass" and "F" means "fail".

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