



MATERIAL SAFETY DATA SHEET

MSDS Reference #GE201502

(form according to EEC Directive 93/112/EC)

NAME : *LITHIUM THIONYL CHLORIDE BATTERIES*

1 - IDENTIFICATION (of the product and the supplier)

1.1 Product : **LITHIUM THIONYL CHLORIDE BATTERY**

Trade name and model : *NON-RECHARGEBLE LITHIUM BATTERY*

Models : **ER14250 ER14250M ER14335 ER14335M**
 ER14505 ER14505H ER14505M ER17505
 ER18505 ER18505M ER26500 ER26500M
 ER34615 ER34615M ER341270 ER10280

Electrochemical system :

Electrodes	Negative electrode CARBON	Positive electrode LITHIUM
Electrolyte	THIONYL CHLORIDE inorganic electrolyte	
Nominal voltage	3.6 Volts	

1.2 Supplier :

Name : GREEN ENERGY BATTERY CO.,LTD

Add : 3/F,Building C,Xintian Innovation Industrial Park,Guanlan Street,
 Baoan District,Shenzhen,518110, China

Phone : +86-755-82686485

Fax : +86-755-25981759

2 - COMPOSITION (typical weight percentages of basic material)

Active materials

	Appr . Percent of Total Weight (%)	CAS No.
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Lithium (Li)	1.6-4.50%	7439-93-2
Carbon black (C)	3.25-15.6%	1333-86-4
Thionyl chloride (SOCL2)	32-42.05%	7719-09-7
Lithium aluminum tetrachloride (LiAlCl4)	2.7-5.56%	14024-11-4

Passive materials

		Appr . Percent of Total Weight (%)
Base Metal	Steel	32--41.23%
Others	Plastic	2.53-3,78%
	Glass fiber	0.54--0.88%

3 - HAZARDS IDENTIFICATION

The Non-rechargeable lithium-thionyl chloride batteries are not hazardous when used according to the recommendations of the manufacturer.

But if the design of the circuit doesn't forecast all the necessary cares to prevent the inversion of polarity in the assembly of the battery or the battery bt packs, there is the risk of dangers due to the explosion of the battery.

Define with care the assembling process to assure that accidental short circuit don't happend.

Do not expose the batteries to temperature above 100°C.

If the battery lose its integrity and sealing, due to break or damages (mechanical, thermal or electrical), leakage, explosion or fire may follow.

In this case there is the risk of release of chemical materials as defined in the paragraph 2 (active materials) of this safety sheet.

Here below are shown the nature of special risks and the advices of caution.

Nature of special risks

- R14/15 (reacts with water and yields flammable gases)
- R21 (harmful in contact with skin)
- R22 (harmful if swallowed)
- R35 (causes severe burns)
- R41 (risk of serious damage to the eye)
- R42/43 (may cause sensitiation by inhalation and skin contact)

Safety advices

- S2 (keep out of reach from children)
- S8 (keep away from moisture)
- S22 (do not breathe dust)
- S24 (avoid contact with skin)
- S26 (in case of contact with eyes, rinse immediatly with plenty of water and seek medical attention)
- S36 (wear suitable protective clothing)
- S37 (wear suitable gloves)



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S43 (in case of fire use extinguisher type D. DO NOT USE WATER)

S45 (in case of incident or indisposition seek medical attention)

4 - FIRST AID MEASURES

Only in case of contact with internal components of the battery:

Skin contact: flush with plenty of water

Eye contact: flush with plenty of water (eyelids held open)

Inhalation: breath fresh air and give oxygen or artificial respiration by specialist people
Ingestion: drink much water and consult a doctor

5 - FIRE-FIGHTING MEASURES

Extinguishing media: extinguishers type D, Lith-X, DO NOT USE WATER in case of battery leakage

Special hazards: irritating vapour

Special protective equipment: wear protective clothing, use self-contained breathing apparatus with filtered cartridge type ABEK

6 - ACCIDENTAL RELEASE MEASURES

In case of break of a battery, all the people must go away from the place where the incident happened and come back only after the dissolution of the irritating gas.

Broken batteries or battery packs must be covered with sodium carbonate (Na_2CO_3) or dry sand, place them in approved container and dispose in accordance with local regulation.

For the eventual handling use gloves in Viton®

7 - HANDLING AND STORAGE

7.1 Handling:

Do not recharge

Do not use different types and brands of batteries or with different state charge

Avoid short circuit

Use desk of work electrically insulated

Avoid to work over wet surface

Use plastic caliper to measure the dimensions of a Lithium battery or to insulate the metallic surface of the battery

Do not have rings on the fingers; otherwise wear insulating gloves.

Do not cut in the same time both the terminals of a battery: it could be a short circuit through the shears

Keep the batteries in non-conductive trays (i.e. plastic, wood or carton)

Do not solder directly on the battery

Do not disassemble the batteries, do not throw them in the fire, do not hole, do not overheat or plunge into water

7.2 Storage:

Store the Lithium cells in a cool, dry and ventilated area far from fires and heating sources.

It is recommended the use of a non-combustible structure, keep adequate clearance between walls and batteries.



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The maximum temperature suggested for the storage is +30°C

Higher temperatures are allowed but cause an increase in the self discharge of the battery and speed up the process of passivation

in any case, never go over 100 °C, as the batteries can break and cause a leakage

Arrange adequate protections to avoid possible hurts to the batteries

Keep the batteries in their original packages till when they are used

Do not expose the batteries directly to the sun light

Do not put a higher number of cartons one on another (respect what indicated)

If in the same place are storage batteries with a total capacity > 50,000 Ah, it is suggested to install an alarm for smoke and gas

8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

If the battery is integral, storage and handle with care, there is any dangers.

It is suggested to handle the batteries in a ventilated place, to don't smoke, eat or drink during the assembling

9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: The battery is a metal cylinders, fitted with an external plastic sleeve

10 - STABILITY AND REACTIVITY

10.1 Conditions to avoid:

Do not expose at temperature higher than 100°C.

Avoid short circuit, crush, exposition to heat sources.

Do not disassemble the batteries or the battery packs, do not throw them in the fire, do not perforate them, do not overheat or wet them.

10.2 Material to avoid:

Water, oxidizing agents, alkalis

11 - TOXOLOGICAL INFORMATION

The rupture of a lithium-thionyl chloride batteries can developed the following substances:

- Hydrogen (H₂), lithium Oxide (Li₂O) and lithium Hydroxide (LiOH) in case of reaction of lithium metal with water
- Chlorine (Cl₂), sulfur dioxide (SO₂) and disulfur dichloride (S₂Cl₂) if the thionyl chloride go above 140,5°C
- Hydrochloric acid (HCl) and sulfur dioxide (SO₂) in case of reaction of thionyl chloride with water
- Hydrochloric acid (HCl), lithium oxide (Li₂O), lithium hydroxide (LiOH) and aluminium hydroxide (Al(OH)₃) in case of reaction of lithium tetrachloroaluminate with water..

12 - ECOLOGICAL INFORMATION

When promptly used or disposed the battery does not present environmental hazard.



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When disposed, keep away from water, rain and snow.

13 - DISPOSAL CONSIDERATIONS

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

If batteries are still fully or only partially discharged, they can be considered a reactive hazardous waste because of significant amount of not creation, or unconsumed lithium remaining in the spent battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste. Recycling of battery can be done in authorized facility, through licensed waste carrier.

14 - TRANSPORT INFORMATION

Restriction for the transport: class 9 in accordance to the United Nation regulation.

IATA Proper Shipping Name: Lithium Metal Batteries

Hazard Class: 9

UN No.: UN3090

Packaging group: II

Lithium content exceeds the standard, so it belongs to dangerous goods. Be shipped by passenger and cargo aircraft. The goods are packaged according to the packaging instruction 968 Section I A of DGR.

IMDG Proper Shipping Name: Lithium Metal Batteries

Hazard Class: 9

UN No.: 3090

Packaging group: II

Lithium content exceeds the standard, so it belongs to dangerous goods.

Land Proper Shipping Name: Lithium Metal Batteries

Hazard Class: 9

UN No.: 3090

Lithium content exceeds the standard, so it belongs to dangerous goods.

Separate Lithium Metal batteries when shipping to prevent short-circuiting. They should be packed in strong packaging for support during transport. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles and wet by rain.

Transport Fashion: By air, by sea, by railway, by road

15 - REGULATION INFORMATION

Law Information

<<Dangerous Goods Regulation>>

<<Recommendations on the Transport of Dangerous Goods Model Regulations>>

<<International Maritime Dangerous Goods>>

<<Technical Instructions for the Safe Transport of Dangerous Goods>>

<<Classification and code of dangerous goods>>

<<Occupational Safety and Health Act>> (OSHA)

<<Toxic Substances Control Act>> (TSCA)

<<Consumer Product Safety Act>> (CPSA)



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<<Federal Environmental Pollution Control Act>> (FEPCA)

<<The Oil Pollution Act>> (OPA)

<<Resource Conservation and Recovery Act>> (RCRA)

<<Safety Drinking Water Act>> (CWA)

<<California Proposition 65>>

<<Code of Federal Regulations>> (CFR)

In accordance with all Federal, State and Local laws.

16 - OTHER INFORMATION / DISCLAIMER

The batteries or battery packs must be handle by specialize people.

They must be kept out of reach from children.

They must be used following the Technical Specifications, without exceed the values defined.

Do not assemble by one self a serial of batteries, but request the finished battery to the supplier, who will provide for install protection components (diodes, etc..)

The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsiblity for the results of its use. This information is furnished upon condition that the person receiving it shall make his own detemination of the suitability of th ematerial for his particular purpose..