MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Category: Lithium-Thionyl Chloride (Li-$SOCl_2$) Battery

Nominal Voltage: 3.6 V

Product Name

Type	Lithium (gr.)
ER14250	0.31
ER14335	0.43
ER14505	0.69
ER17505	0.93
ER18505	0.98
ER14250M	0.19
ER14335M	0.34
ER14505M	0.51
ER17505M	0.72
ER18505M	0.90

Type	Lithium (gr.)
ER22G68（BEL）	0.10
ER32L65（1/10D）	0.25
ER32L100（1/6D）	0.44
ER1860	0.07
ER2450T	0.13
EF651615（LTC-3PN）	0.10
EF651620（LTC-5PN）	0.14
EF651625（LTC-7PN）	0.19
EF703228（LTC-16PN）	0.41

Supplier's Name: EVE Energy Co., Ltd

Supplier's Address: EVE Industrial Park, Xikeng Industrial Zone, Huihuan Town, Huizhou, Guangdong, China.

Post Code: 516006

Emergency Telephone: (+86) -752-2606966

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Note: The battery is neither substance nor mixture but product and having no risk to life and health under normal use or transportation because ingredients of battery is not leaked out by virtue of hermetical sealing with metal case.

This sheet notifies possible risk of our battery under abnormal use but mainly aim to provide information about ingredients, notification of handling and transportation regulations as a useful reference.

2. Hazards identification

The important hazards and adverse effects of the chemical product	No information available
Chemical product – specific hazards	No information available
Outline of an anticipated emergency	Chemical contents are seal in metal can. Therefore, risk of exposure never occurs unless battery is mechanically or electrically abused. Risk of explosion by fire is anticipated if batteries are dispose of in fire or heated above 100 degree Celsius. Stacking or jumbling of batteries may cause external short circuits, heat generation, in some case, allowing fire or explosion.

Note: our battery is not classified in accordance with the GHS classification.

3. Composition / Information on Ingredient

Material	CAS#	% wt.
Lithium metal	7439-93-2	0.13~3.7
Thionyl Chloride electrolyte	7719-09-7	18~38
Carbon	1333-86-4	1.8~4.2

4. First-aid measures

Inhalation	If ingredient leaked out from inside of a battery and if inhaled it, move to a place where fresh air is provided. Refer for medical attention.
Skin contact	If ingredient leaked out from inside of a battery and stuck on skin, wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin. Refer for medical attention.
Eyes contact	If ingredient leaked out from inside of a battery and came into eyes, flush the eyes with plenty of water for at least 15 minutes immediately without rubbing. Take a medical treatment. If appropriate procedures are not taken, this may cause an eye irritation.
Swallowing	In case of swallowing of battery, immediately refer for medical attention.

5. Fire-fighting Measures

Fire extinguishing agent:

Dry chemical, alcohol-resistant foam, powder, atomized water, carbon dioxide and dry sand are effective.

Extinguishing method:

Escape batteries to safe place prevent from ignition by spreading fire.

Because of packing material of battery is paper, use water extinguisher, CO2 extinguisher or powder extinguisher as normal extinguisher.

Since vapor, generated from burning batteries may make eyes, nose and throat irritate, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.

6. Accidental Release Measures

Chemical contents are sealed in metal can. But if the battery is mechanically or electrically abused, contents may leak out. In such case, take action as shown below.

Personal precautions: Temporary inhalation of odor and attaching of electrolyte to skin does not cause serious health hazard. Be sure the ventilation and washing out of electrolyte quickly.

Environmental precautions: Clean up it quickly. Specific environmental precaution is not necessary.

Method and materials for containment and methods and materials for cleaning up:

Contain and collect spillage and place in container for disposal according to local regulations.

7. Handling and Storage

Handing	Do not charge, short-circuit, disassemble, deform, heat above 100℃ or incinerate. Do not pile up or mingle battery with each other. Do not place battery on metal case, metal plate or antistatic material. In case of multi cell application, replace all batteries to new at once when replacing used batteries.
Storage	Be sure to store batteries in well-ventilated, dry and cool conditions. Keep away from water, rain, snow, frost or dew condensation. Do not store batteries near source of heat or nozzle of hot air. Do not store batteries in direct sunshine. Take care not to get wet packing by dew condensation when packing is removed from cold to warm and humid condition. Enough number of fire fighting apparatuses should be installed in warehouse

8. Exposure Controls and Personal Protection

There is no need of personal protective equipment on regular handling and storage. In the event, however, a large amount of electrolyte should be released by mechanical or electrical abuse, use the protection as shown below.

Respiratory protection: Mask (with a filter preferably)

Hand protection : Synthetic rubber gloves

Eye protection : Goggles or glasses

9. Physical and Chemical Properties

State：Solid

Shape: Cylindrical、Prismatic

10. Stability and Reactivity

Stability: Stable on regular handling

Conditions to Avoid: External short circuit of battery, deformation by crush, exposure at high temperature of more than 100 degree C (may cause heat generation and ignition), direct sunlight, high humidity.

Materials to avoid: Substances that cause short circuit.

11. Toxicological Information

Inhalation, skin contact and eye contact are possible when the battery is opened. Exposure to internal contents, the corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

12. Ecological Information

Persistence and degradability	No information available
Mobility in soil	No information available

13. Disposal Considerations

Dispose of batteries in accordance with applicable federal, state and local regulations.

For safety precaution, battery should be insulated in proper manner; covering both terminals by tape, wrapping of battery in insulative bag or packing battery in original package is recommended in order to prevent ignition due to short-circuit.

14. Transport Information

For the international transport of lithium batteries, they must comply with these regulations: the International Maritime Dangerous Goods (IMDG) Code by International Maritime Organization (IMO), Dangerous Goods Regulations (DGR) by International Air Transport Association (IATA) and Technical Instructions for the Safe Transport of Dangerous Goods by Air (TI) by International Civil Aviation Organization (ICAO). These regulations are based on the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria.

Lithium batteries which meet the requirements of UN38.3 (UN Manual of Tests and Criteria, Part Ⅲ, subsection 38.3) could be transported by air and by sea as ordinary goods, otherwise should be transported according to Class 9, Packing Group Ⅱ hazardous goods.

As the published of the UN Recommendations on the Transport of Dangerous Goods, all these regulations have added some new contents to regulate the transport of lithium metal batteries. And they should be complied since 1January 2009. Following the latest changes on Lithium Cells / Batteries shipment as per the 56th edition of IATA Dangerous Goods Regulations, the Lithium Battery Best Practice 014 will replace Best Practice 014 and with effect from 1 January 2015.

1. For lithium metal batteries, UN ID number is 3090. For lithium metal batteries contained in equipment or lithium metal batteries packed with equipment, UN ID number is 3091.
2. The consignment should be fully described by proper shipping name and packed, marked and in proper condition for carriage by air. The consignment is not classified as dangerous under the current edition of the IATA 56th Effective, Dangerous goods regulation and all applicable carrier and government regulations.
3. For transported air, Lithium-metal Cells/Batteries shipped as “Not Restricted” Cargo: Must comply with Section Ⅱ of PI968-P1970 accordingly; For cells, the lithium content should not be more than 1g; for batteries, the lithium content should not be more than 2g. Lithium content must be marked on the outside of the battery case (marked by manufacturer).
4. Each consignment must be accompanied with a document such as an air waybill with an indication. For those Lithium metal cells/batteries contained in equipment, the equipment must be equipped with an effective means of preventing accidental activation.

5. T eed to paste the Li-metal battery marking; The net quantity of lithium-metal battery (cells) shall not exceed 5kg if transport as PI 969 or PI 970; and need to paste the Li-metal battery marking.
6. Each package must be capable of withstanding a 1.2m drop test in orientation without damage of cells or batteries contained therein.
7. Lithium batteries which meet the requirements of which could be transported by air, and the batteries manufactured by EVE Energy Co., Ltd meet these requirements. (Lithium batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden transport.)
8. he net quantity of lithium –metal battery（cells），shall not exceed 2.5kg if transport as PI 968,and n
9. Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packing that could lead to short circuit.
10. Lithium –metal battery is applicable to the International Maritime Dangerous Goods Code (IMDG-Code) Special provision 188 because it corresponds to either case that the cell – lithium content is less than 1g or the battery – lithium content is less than 2g, so it is permitted to transport as Exempted Dangerous Goods when it complies with all requirements of the transport conditions.

UN No.	Proper Shipping Name/Description
3090	Lithium metal batteries
3091	Lithium metal batteries contained in equipment
3091	Lithium metal batteries packed with equipment

Related regulations: Following regulations shall be cited and considered.

Transportations	Related organization / Issue documents
Air transport (by airplane)	ICAO (International Civil Aviation Organization) / TI (Technical Instruction) IATA (International Air Transport Association) / DGR (Dangerous Goods Regulations) *1
Maritime transport (by ship)	IMO (International Maritime Organization) / IMDG Code (International Maritime Dangerous Goods Code) *2
Land transport (Intra-European)	RID (International Carriage of Dangerous Goods by Rail) , ADR (International Carriage of Dangerous Goods by Road)
USA / UN	USDOT (US Department of Transportation) / DOT 49 CFR (US law) UN: Recommendations on the transport of dangerous goods: Manual of Tests and Criteria 5th revised edition Amendment 1 [ST/SG/AC.10/11/Rev.5/Amend.1]: Part III, Subsection 38.3

15. Regulatory Information

Environment-related law of batteries: EU nations have applicable law in accordance with Directive 2006/66/EC and other some countries, China, Korea, Brazil, some provinces of USA and Canada or so have similar law.

16. Other information

Reference

- **IATA Dangerous Goods Regulations, latest edition**

Notes on this sheet

*1 Dangerous Goods Regulation – 56th Edition Effective 1 January 2015: International Air Transport Association (IATA)

*2 MDG Code IMO/IMDE36-2012 Edition: International Maritime Organization (IMO)

This sheet refers to normal use of the product in question. EVE Corp. makes no warranty expressed or implied

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