

# Material Safety Data Sheet (MSDS)



PeakTech Prüf- und Messtechnik GmbH

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## 1. – Identification

### 1.1 Product Name and Description:

Battery: Lithium-ion, Rechargeable  
Electro-chemistry: Lithium-ion (Li-ion)  
Manufacturer: ShenZhen Calf Power Technology Co. Ltd  
Item Number: 18500

### 1.2 Supplier

#### Office Address

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## 2. – Hazard Identification

The lithium ion cell/battery covered in this Data Sheet is hermetically sealed in an aluminum alloy or metal case and not hazardous if used as recommended by the manufacturer. Under a normal condition of use, the electrode materials and electrolyte contained in a cell/battery are non-reactive provided the battery integrity is maintained. Risk of exposure exists only in case of mechanical, electrical or thermal abuse. Warning: the cells/batteries should not be short circuited, punctured, incinerated, crushed, immersed in water, over-discharged, or exposed to a temperatures above the declared operation temperature range of the cell or battery. Risk of fire or explosion may occur in the above condition of abuse.

## 3. — Information on Ingredients

Hazardous Ingredients (Chemical Name)	Concentration or concentration ranges (%)	CAS Number
Cobalt lithium manganese nickel oxide	26.64	346417-97-8
Lithium manganese oxide	6.66	12057-17-9
PVDF	0.4	24937-79-9
Carbon black	0.4	1333-86-4
Carbon	17.2	7440-44-0
SBR	0.7	9003-55-8
EC	5.1	96-49-1
EMC	10.2	623-53-0
Aluminum	2.9	7429-90-5
Copper	5.4	7440-50-8
Iron	17.5	7439-89-6
Others	6.9	N/A

## 4. - First Aid Measures

In case of battery rupture, major leakage or explosion, evacuate all workers and quarantine the contaminated area. Provide good ventilation to clear out any evacuate fumes, gases or the pungent odor.

Eyes - Rinse eyes with plenty of water for 15 minutes; Seek immediate medical attention.

Skin - Rinse affected area with plenty of water and soap or take a shower for 15 min;

Inhalation - Expose the person to fresh air and use artificial respiration if needed;  
Seek medical attention if necessary.

Ingestion - Consult a physician or local poison control center immediately;

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## 5. - Fire Fighting Measures

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**Extinguishing media:**

1. Dry chemical or water type extinguishers are the most effective means to extinguish a cell or battery fire.
2. A carbon dioxide (CO<sub>2</sub>) extinguisher is also effective.

**Special fire fighting procedures:**

Respiratory protection: In all fire situations, wear self-contained breathing apparatus (SCBA) and chemical apron.

Skin protection: Wear full fire fighting protective clothing and equipment to prevent body contact with electrolyte solution.

Eye protection: Safety glasses are recommended.

During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.

**Causes of unusual fire or explosion hazard:**

Cells or batteries that are damaged, opened or exposed to excessive heat/fire may flame or leak potentially hazardous organic vapors.

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## 6. - Accidental Release Measures

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**Procedures to contain and clean up leaks and spills:**

Under a normal condition of use, a battery is hermetically sealed and not hazardous. Leakage or release of hazardous materials contained within a battery would be possible under abusive conditions.

In the event of battery rupture and leakage: contain the spills and cover the spills or leakage with dry sand or 1:1 mixture of soda ash and slaked lime.

Rubber gloves must be used to handle all battery components.

Avoid inhalation of any vapors that may be emitted.

Damaged batteries that are not hot or burning should be placed in a sealed plastic bag or container.

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## 7. - Handling and Storage

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**Precautions for safe handling:**

Avoid any contact with the contents in case of rupture, leakage or explosion. Follow the procedures in Section 6 to handle and dispose the spills or waste.

Batteries are designed to be recharged. However, improperly charging a cell or battery may cause the product to flame or leak. Use only approved chargers and procedures.

Never disassemble a battery or bypass any safety device.

More than a momentary short circuit will cause temporary battery voltage loss until the battery is subjected to a charge.

Extended short-circuiting creates high temperatures in the cell.

High temperatures can cause burns in skin or cause the cell to flame.

Avoid reversing battery polarity within the battery assembly. To do so may cause cell to flame or to leak.

**Conditions for safe storage and incompatibility:**

Batteries should be separated from other materials and stored in a non-combustible, well ventilated structure with sufficient clearance between walls and battery stacks.

Do not place batteries near heating equipment, nor expose to direct sunlight for long periods.

Do not store batteries above 60°C (140°F) or below -20°C (-4°F).

Store batteries in a cool (below 25°C (77°F)), dry area that is subject to little temperature change.

Do not store batteries in a manner that allows terminals to short circuit.

Maintain the state of charge level at 30-50% when the cell is placed in storage.

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## 8. - Exposure Controls/Personal Protection

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**Engineering controls and work practices:**

Under conditions of normal use, batteries do not emit hazardous or regulated substances.  
No engineering controls are required for handling batteries that have not been damaged.

**Personal protective equipment:**

Personal protective equipment should include chemical resistant gloves and safety glasses.  
In the event of a fire, SCBA should be worn along with thermally protective outer garments.

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## 9. - Physical and Chemical Properties

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Appearance: prismatic or cylindrical, hermetically sealed metal container.  
Open Circuit Voltage (OCV): 3.7V  
Charge temperature range: 0°C to +45°C  
Discharge (operation) temperature range: -20°C to +60°C  
Recommended storage temperature: 3 month: -10°C to +40°C; 6 months: -0°C to +35°C

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## 10. - Stability and Reactivity

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<b>Stability:</b>	The batteries are stable under normal operation and storage conditions.
<b>Hazardous Polymerization:</b>	will not occur.
<b>Materials to avoid:</b>	water, strong acid or alkalis solutions, oxidizing agents.
<b>Conditions to avoid:</b>	short-circuiting, disassembling, over-discharging, heating over the declared operation temperature range of the product.
<b>Hazardous decomposition products:</b>	Carbon Monoxide (CO) and other VOC's

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## 11. - Toxicological Information

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No toxicological impacts are expected under normal use conditions.  
The electrolytes contained in this cell or battery can irritate eyes with any contact if released.  
Prolonged contact of electrolytes with lung tissue, skin or mucous membranes may cause irritation.  
Information regarding sensitization, carcinogenicity, mutagenicity or reproductive toxicity related to internal cell or battery components has not been included in this document.

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## 12. - Ecological Information

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No ecological impacts expected under normal use conditions.  
Information on the ecological impact of internal cell or battery components has not been included in this document.

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## 13. - Disposal Considerations

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Do not dispose in fire or submerge in water.  
Battery disposal regulations vary on national, state/provincial and local bases.  
Disposal must be conducted in accordance with the applicable laws and regulations.  
These batteries contain recyclable materials and recycling is encouraged over disposal.

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#### 14. - Transport Information

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The Li-ion Cell (18500) had passed the UN 38.3 test and is classified as non-dangerous goods and also complies with the UN Recommendations on the Transport of Dangerous Goods; IATA Dangerous Goods regulations, and applicable U.S. DOT regulations for the safe transport of Li-ion Cell.

The Li-ion Cell is transported according to the NEW PACKING INSTRUCTION 965 Section I B or 966 Section II or 967 Section II of IATA DGR 59<sup>th</sup> edition.

More information concerning shipping, testing, marking and packaging can be obtained from label master at <http://www.labelmaster.com/>.

Each package must be labeled with a Lithium Battery handling label.

Li-ion batteries can be treated as "Non-dangerous goods" under the United Nations Recommendations on the Transport of Dangerous Goods, Special Provision 188, provided that packaging is strong and prevent the products from short-circuit.

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.
- The International Maritime Dangerous Goods (IMDG) Code.
- 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)

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#### 15. - Regulatory Information

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##### United States

Hazard Communication Standard (29 CFR 1910.1200):	Article
CERCLA SECTION 304 Hazardous Substances:	N/A
EPCRA SECTION 302 Extremely Hazardous Substance:	N/A
EPCRA SECTION 313 Toxic Release Inventory:	N/A
EPCRA SECTION 312:	N/A
Components Listed on US Toxic Substances Control Act (TSCA) Inventory:	Yes

##### Europe

Registration, Evaluation, Authorization and Restriction of Chemicals (REACH):	Article
European RoHS Directive 2008/35/EC:	N/A
European WEEE Directive 2008/34/EC:	Article

Note: Applies to cells and batteries incorporated into electrical and electronic equipment, when that equipment becomes waste.

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#### 16. - Other Information

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The information contained herein is made in good faith and believed to be accurate by the best knowledge available to us and furnished without warranty of any kind. Users should consider this data only as a supplement to other information gathered by them and must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

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