

# MATERIAL SAFETY DATA SHEET
















## SECTION 1 – PRODUCT IDENTIFICATION AND USE

Product: **Lithium-Ion Rechargeable battery**

Use: Providing the power for the medical device

Manufacturer: Suzhou Sinlion Battery Tech Co.,Ltd.  
 Building C29,Dongping Road,SIP  
 BioBay,Suzhou,Jiangsu,China  
 TEL: +86-512-80911707  
 FAX: +86-512-80911702

## SECTION 2 – HAZARDOUS INGREDIENTS

Hazardous Ingredients	%	CAS Number	LD <sub>50</sub> (mg/kg) (oral-rat)	LC <sub>50</sub> (mg/L)	Hazards identification
Aluminum	10-20w/w	7429-90-5	N/AV	N/AV	R 51/53-65-67
Carbon,amorphous, powder	0.1-1w/w	7440-44-0	440 (ivn-mouse)	N/AV	R 51/53-65-67
Copper foil	5-15w/w	7440-50-8	3.5 (ipr-mouse)	N/AV	R 51/53-65-67
Diethyl Carbonate (DEC)	1-10w/w	105-58-8	8500	N/AV	R 11-38-51/53-65-67;  Xn,  N,  F
Ethylene Carbonate (EC)	1-10w/w	96-49-1	10000	N/AV	R 11-38-51/53-65-67  Xn,  N,  F
Dimethyl Carbonate (DMC)	1-10w/w	616-38-6	13000	N/AV	R 11-38-51/53-65-67  Xn,  N,  F
Lithium Hexafluorophosphate (LiPF <sub>6</sub> )	1-5w/w	21324-40-3	1702	Rat: >20	R 11-38-51/53-65-67  Xn,  N,  F
Graphite, powder	10-30w/w	7782-42-5	N/AV	N/AV	R 51/53-65-67
Lithium Manganese Oxide (LiMn <sub>2</sub> O <sub>4</sub> )	10-15w/w	12057-17-9	5000	N/AV	R 51/53-65-67
Lithium Cobalt(III) Oxide LiCoO <sub>2</sub>	15-20w/w	12190-79-3	5000	N/AV	R 51/53-65-67
Poly (vinylidene fluoride) (PVDF)	0.5-2w/w	24937-79-9	N/AV	N/AV	R 11-38-51/53-65-67  Xn,  N,  F
Polypropylene (PP)	0.5-1w/w	9003-07-0	N/APP	N/APP	R 51/53-65-67
Polyethylene (PE)	0.5-1w/w	9002-88-4	N/APP	N/APP	R 51/53-65-67

## SECTION 3 – HAZARDS IDENTIFICATION

Hazard description:



Xn Harmful  
 N Dangerous for the environment

Classification system:

The classification is according to the latest editions of the EU-lists, and extended by company and literature data.



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## SECTION 4 – FIRE-FIGHTING MEASURE

Flammability: NO	Conditions: Organic components will burn if cell incinerated. Combustion of cell contents will cause evolution of Hydrogen Fluoride.
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Means of Extinction and special Procedures:  
Water spray, Carbon dioxide, Dry chemical powder or appropriate foam. Use agent appropriate for surrounding materials.  
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Extremely corrosive Hydrogen fluoride gas is produced upon combustion of cell contents.

Flashpoint: NONE	Upper Flammable Limit: NONE	Lower Flammable Limit: NONE
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Auto-Ignition Temp.: NONE	Hazardous Combustion Products: Hydrogen Fluoride, Phosphorous Oxides, Carbon Monoxide, Carbon Dioxide, Lithium Hydroxide, Manganese Dioxide, Aluminum Oxide, possible fluoro-compounds, Carbon soot
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Impact sensitive: NO	Static discharge Sensitive: NO, but cell may contain up to 4.2 volts.
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## SECTION 5-ACCIDENTAL RELEASE MEASURE

Person-related safety precautions: Wear protective equipment. Keep unprotected persons away.

Measures for environmental protection:  
Do not allow product to reach sewage system or any water course.  
Inform respective authorities in case of seepage into water course or sewage system.  
Do not allow to enter sewers/ surface or ground water.

Measures for cleaning/collecting:  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.

## SECTION 6-HANDLING AND STORAGE

Store: the battery should be stored at room temperature.

## SECTION 7 – STABILITY REACTIVITY DATA

Stability: STABLE	Hazardous polymerization will not occur. Spontaneous decomposition at normal temperatures will not occur.
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Incompatibilities:  
  
Do not crush, puncture, incinerate, immerse in water or heat over 125 °C. Steel casing slowly dissolves in strong mineral acids.

Reactivities:  
None known

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Hazardous Decomposition Products:  
Hydrogen Fluoride, Carbon Monoxide, Carbon Dioxide, Lithium Hydroxide, Manganese Dioxide, Nickel Oxide, Cobalt Oxide, Aluminum Oxide, possible fluoro-compounds, Carbon soot

### SECTION 8 – PHYSICAL AND CHEMICAL PROPERTIES

See section 2 and section 4

### SECTION 9 – TOXICOLOGICAL INFORMATION

Routes of Entry:				
Skin Contact: NO	Skin Absorption: NO	Eye contact: NO	Inhalation: NO	Ingestion: NO
Acute Exposure				
Skin:	No effect noticed in routine handling of product.			
Eyes:	The bulk solid has no effect on the eye.			
Inhalation:	Not applicable.			
Ingestion:	Ingestion is not likely, given the physical size and state of the cell.			
Chronic Exposure				
Skin:	Not anticipated.			
Eyes:	Not applicable.			
Inhalation:	Not applicable.			
Ingestion:	Ingestion is not a likely exposure route.			
Exposure Limits:	Irritancy:	Sensitization:	Carcinogenicity:	
None listed	None	Not anticipated	Not anticipated	
Teratogenicity:	Mutagenicity:	Reproductive toxicity:	Synergistic Products:	
Not anticipated	Not anticipated	Not anticipated	None expected	

### SECTION 10 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment:

Gloves:	
Not required for handling individual cells. handling.	Fabric gloves for warehouse container
Respirator:	
No respirator required for normal handling.	SCBA required for fires.
Eyewear:	
Not required beyond employer policy.	
Clothing:	

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Standard industrial clothing in normal use.	Impervious suit in fires.
Footwear:	
Wear protective footwear if large containers of cells are being handled.	
Engineering controls:	
Keep away from heat and open flames.	Store in a cool, dry place.
Leak and spill procedure:	
Evacuate area if fire present or likely. Wear SCBA for fire-related emergencies. Using gloves, pick up or sweep up fire-damaged cells, bag individually in plastic bags and place in closed metal containers. 205 Litre lined steel drums are appropriate. Cardboard boxes may be used for small quantities. Avoid raising dust while sweeping. Transport container outdoors. Hold burnt cells and fires cleanup solids for disposal as potential hazardous waste. Unburnt cells are not hazardous waste. A fire with over 100kg of cells burnt will likely require reporting to environment officials. Always consult and obey all international, federal and local environmental laws.	
Waste disposal:	
Always consult and obey all international, federal, provincial/state and local hazardous waste disposal laws. Some jurisdictions require recycling of this spent product.	
Handling procedures and equipment:	
Store in a cool, dry place away from sparks and flame. Keep below 125°C. Keep above -60°C. Charge between 0°C and 45°C. Use only approved charging equipment. Do not disassemble battery or battery pack. Do not puncture, crush or dispose of in fire.	
<b>SECTION 11 – FIRST AID MEASURES</b>	
Skin:	Not a health hazard
Eyes:	Not an eye hazard
Inhalation:	Not an inhalation hazard
Ingestion:	If swallowed, seek emergency medical aid. If patient choking and can partially breathe, encourage patient to cough. Do not strike patient's back.
	This may lodge cell further in throat. If patient is not breathing, perform standing Heimlich maneuver until object is dislodged or patient becomes
<b>SECTION 12 – Disposal Consideration</b>	
Do not disassemble or modify the cell.	
Do not throw out the battery or cell. Recycle it through the recycling company following the law of each country.	
<b>SECTION 13 – Transport Information</b>	
In the case of transportation prevent the damage of the product by handling the cargo carefully without dropping, falling, breakage, or wetting by the rain.	
Transport under following regulations.	
Air	

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-IATA (International Air Transport Association): DGR (Dangerous Goods Regulations)
-ICAO (International Civil Aviation Organization): TI (Technical Instructions for Safety Transport of Dangerous Goods by Air)
Marine
-IMO (International Maritime Organization): IMDG (International Maritime Dangerous Goods) Code
The UN Number is 3090 and Class is 9.
<b>SECTION 14 – Regulatory Information</b>
Regulations especially applicable for the product.
1) IATA: DGR 47 <sup>th</sup> Edition, Effective 1 January 2006
2) ICAO: TI 2005-2006 Edition
3) IMO: IMDG Code 2004 Edition
4) US Department of Transportation 49 CFR (Code of Federal Regulations) (USA)
<b>SECTION 15 – ECOLOGICAL INFORMATION</b>
See section 2
<b>SECTION 16 OTHER INFORMATION</b>
The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. Exact composition information is immediately available on confidential bases to medical professionals treating exposure to cell components or combustion byproducts.

## HYDROFLUORIC ACID EXPOSURE DURING FIRE FIGHTING

This information is given for the use of professional fire fighters responding to a warehouse fire where fire from other materials may incinerate cells. This section is provided solely in case of exposure, during fire fighting, to the combustion byproducts. Hydrofluoric acid is not present in the product. Contact with cells causes none of the following symptoms.

Hydrofluoric acid is extremely corrosive. Contact with hydrogen fluoride fumes is to be avoided. Permissible exposure limit is 3 ppm. In case of contact with hydrogen fluoride fumes, immediately leave the area and seek first aid and emergency medical attention. Symptoms may have delayed onset. Fluoride ions penetrate skin readily causing destruction of deep tissue layers and even bone. Fluoride interferes with nerve impulse conduction causing severe pain or absence of sensations. Immediately flush eyes or skin with water for at least 20 minutes to neutralize the acidity and remove some fluoride. Remove and destroy all contaminated clothing and permeable personal possessions. Before re-use, impermeable possessions should be soaked in benzalkonium chloride after water washing. Following flushing of the affected areas, an iced aqueous solution of benzalkonium chloride or 2.5% calcium gluconate gel should be applied to react with the fluoride ion. Compresses and wraps may be used for areas where immersion is not practical. Medicated dressing should be changed every 2 minutes. Exposure to hydrofluoric acid fumes sufficient to cause pain requires immediate hospitalization for monitoring for pulmonary edema.