

# GP Batteries

## Safety Data Sheet for Lithium Metal Battery

Document Number: RRS0541

Revision: 1

Date of prepared: 1 Jan 2016

### Section I – Product and Company Identification

#### Information of Product

<b>Product Identity (used on the label)</b>	Lithium Metal Battery
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#### Information of Manufacturer

<b>Manufacturer's Name</b>	<b>Emergency Telephone Number</b>
GPI International Ltd.	Within USA & Canada call: +1-800-424-9300
	Outside USA and Canada call: +1-703-527-3887
<b>Address (Number, Street, City State, and ZIP Code)</b>	<b>Telephone Number for Information</b>
8/F GP Building, 30 Kwai Wing Road, Kwai Chung, N.T., Hong Kong	+852-24843333
	<b>Date of prepared and revised</b>
	1 <sup>st</sup> Jan 2016

#### Recommended use of chemicals:

N.A.

### Section II – Hazards Identification

**GHS Classification:** N.A.

Under normal conditions of use, the battery is hermetically sealed. If the electrolyte is leaked, hazardous material may be released.

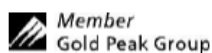
#### Human Health Effects

Inhalation	N.A.
Skin contact	
Eye contact	
Ingestion	

#### Environmental Effects

Toxicity to soil. Do not throw it out into the environment.

Remark: "N.A." is indicated if not applicable.



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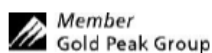
### Specific Hazards

As previously described.

## Section III – Composition/Information on Ingredients

Chemical Name/Common Name	CAS No.	%/wt
Manganese-dioxide	1313-13-9	30 ~ 40
Lithium metal	7439-93-2	2 ~ 4
Lithium trifluoromethanesulfonate LiCF <sub>3</sub> SO <sub>3</sub>	33454-82-9	1 ~ 1.4
Ethylene carbonate	96-49-1	1.3 ~ 1.9
Propylene carbonate	108-32-7	1.2 ~ 1.6
1,2-Dimethoxyethane	110-71-4	6.5 ~ 9.1
Iron	7439-89-6	32 ~ 38
Carbon	7440-44-0	3 ~ 5
Polypropylene	9003-07-0	2 ~ 4
Polyethylene	9002-88-4	1 ~ 2
Other		3 ~ 4

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### Section IV – First-aid Measures

<b>Inhalation</b>	Seek fresh air and immediately get medical attention after inhaled
<b>Skin Contact</b>	Wash affected area with plenty of soap and water, if irritation develops, get medical attention
<b>Eye Contact</b>	Flush with water for at least 15 minutes, if irritation develops, get medical attention
<b>Ingestion</b>	Get medical attention immediately if ingestion

### Section V – Fire-fighting Measures

<b>Extinguishing Media</b>	Carbon dioxide; fire foam; dry sand; water spray and powder etc.
<b>Unusual Fire and Explosion Hazards</b>	Acrid or harmful fume is emitted during fire.
<b>Means of extinction</b>	Means of extinction: remove batteries to safe place to avoid fire spreads. Use water, carbon dioxide, powder if the materials for packing is paper. Then burning vapour has irritation to eyes, nose and throat, hence, it is suggested conduct fire fighting in the draught. Use mask when needed indeed.

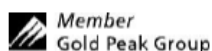
### Section VI – Accidental Release Measures

<b>Health Cautions</b>	The electrolyte may not cause great damage to health as soon as inhalation or contact to skin, but should be cleaned immediately and remove to fresh air.
<b>Environmental precautions</b>	Clean thoroughly, no great damage to environment.
<b>Measures/container for collection, neutralization and crimping</b>	Collect in an empty container and dispose according to regulations

### Section VII – Handling and Storage

<b>Handling</b>	(1) Do not dispose batteries to fire in case of charge, short-circuit, disassembling, or heating. (2) Do not stack or mix up batteries.
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	<p>(3) Do not place batteries to metal container, metal sheet or antistatic materials.</p> <p>(4) Batteries should be changed at the same time when used in a multiple-cell applied device.</p>
<b>Storage</b>	<p>(1) Stored in a dry and cool place with good ventilation.</p> <p>(2) Avoid water, snow, frost or condensation of moisture when packing.</p> <p>(3) Do not place batteries to heat or hot air outlet.</p> <p>(4) Do not dispose batteries to sun directly.</p> <p>(5) Avoid condensation of moisture when remove batteries from cold to hot place.</p> <p>(6) Provide several fire extinguishers in the warehouse.</p>

### Section VIII – Exposure control and protective measures

#### Engineering Control

No special protection tools needed for normal use. In case of abnormal use in devices or appliances, electrolyte may leak and certain protection tools should be used as below:

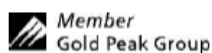
- (1) Respiratory protective equipment: face mask (with apparatus respirator).
- (2) Hand protective equipment: synthetic rubber gloves.
- (3) Eye protective equipment: protective spectacles.

**Exposure Control Limit:** N.A.

### Section IX – Physical and Chemical Properties

<b>Appearance</b>	<b>Odor</b>
Solid, Cylindrical Shape	Odorless
	<b>Odor Threshold</b>
	N.A.
<b>pH</b>	<b>Melting point/freezing point</b>
N.A.	N.A.
<b>Initial boiling point and boiling range</b>	<b>Flash point</b>
N.A.	N.A.

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<b>Evaporation rate</b> N.A.	<b>Flammability (solid, gas)</b> N.A. <b>Upper/lower flammability or explosive limits</b> N.A.
<b>Vapor pressure</b> N.A.	<b>Vapor density</b> N.A.
<b>Relative density</b> N.A.	<b>Solubility</b> Insoluble in water
<b>Partition coefficient: n-octanol/water</b> N.A.	<b>Auto-ignition temperature</b> N.A.
<b>Decomposition temperature</b> N.A.	<b>Viscosity</b> N.A.

### Section X – Stability and Reactivity

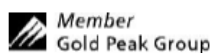
<b>Stability</b>	Stable under normal use
<b>Possibility of hazardous reactions</b>	By misuse of a battery cell, the battery may cause internal gas or heat generation resulting in venting, explosion, and possibly fire. When a battery cell is heated strongly by the surrounding fire, harmful fume may be emitted.
<b>Conditions to avoid</b>	external short-circuit, deformation by press, excessive temperature (above 100°C, which may cause heat or fire), dispose to sun directly or high humidity.
<b>Materials to avoid</b>	Conductive substance may cause short-circuit.

### Section XI – Toxicological Information

There is no toxicity data for Lithium Metal Battery. Under normal conditions of use, the battery is non-toxic.

The followings are toxicological information for materials inside batteries for reference.

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component	classification	Symptom
manganese dioxide	acute toxicity	Rabbit LDLO(vein)=45mg/kg Mouse LD50(subcutaneous)=422mg/kg
	partially affected	irritation to eyes, nose, throat and skin
	chronic toxicity or long-term toxicity	Parkinson's central nervous syndrome may caused by long-term (at least 3 months) inhalation of dirt or gas
lithium metal	acute toxicity	no reference
	partially affected	chemical burning may occur in case of contact to skin or eyes
electrolyte	acute toxicity	no reference
	partially affected	a little bit irritation to eyes

### Section XII – Ecological Information

Persistence/degradability:

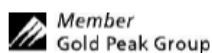
Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.

### Section XIII – Disposal Considerations

Recommended methods for safe and environmentally preferred disposal:

- (1) Dispose of in a manner consistent with regulations.
- (2) For safety purpose, insulation measures are need to avoid heat or rupture caused by short-circuit, such as film on terminals, insulation bag or original package for packing.

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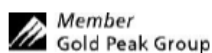
### Section XIV – Transport Information

Regulatory Body	Special Provisions
ADR	P903(P903a / P903b)
IMO	UN 3090 P903 and SP188
UN	UN 3090
US DOT	49 CFR 173.185
IATA	PI 968

Form of Transportation	UN No.	UN Proper Shipping Name	Transport Hazard Class	Packing Group Number	Environmental Hazards	Guidance Transport in bulk	Special Precaution
Air	3090	Lithium battery (Lithium metal battery)	9	-	No	-	PI 968
Sea	3090	Lithium battery (Lithium metal battery)	9	-	No	-	P903 and SP188

a) In general, all batteries in all forms of transportation (ground, air, or ocean) must be packaged in a safe and responsible manner. Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and be contained in “strong outer packaging” that prevents spillage of contents. All original packaging for GP Lithium batteries (sometimes referred to as “Lithium metal battery”) has been designed to be compliant with these regulatory concerns.

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GP Lithium batteries (sometimes referred to as "Lithium metal battery" ) are defined as class 9 dangerous goods when Cells Lithium weight more than 1 g and batteries Lithium weight more than 2 g, under the IATA Dangerous Goods Regulations 57th edition 2015, ICAO Technical Instructions. These batteries are not subject to the dangerous goods regulations as they are compliant with the requirements contained in the following special provisions.

Primary (non-rechargeable) lithium metal batteries and cells, (UN 3090), are forbidden for transportation aboard passenger-carrying aircraft. Such batteries transported in accordance with Section I of Packing Instruction 968 must be labeled with the CARGO AIRCRAFT ONLY label. Such batteries transported in accordance with Section II of Packing Instruction 968 must be marked "PRIMARY LITHIUM BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT".

b) International Maritime Organization (IMO) IMDG Code regulated these products as UN 3090, Lithium Metal batteries, class 9 dangerous goods with Special Provision 188 and 903 assigned

c) All batteries by our company, including single cells with lithium content less than 1g or battery pack models with lithium content less than 2g, conform to special regulation 188 and transport condition defined in IMDG-Code. it can be transported as non-dangerous goods.

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### **Section XV – Regulatory Information**

Special requirement be according to the local regulations.

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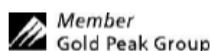
### **Section XVI – Other Information**

This instruction established based on the normal use of the battery, without any ensurance.

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