

## Material Safety Data Sheet

<b>Section 1 (Information of Manufacturer)</b>			
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<b>Product name:</b> Lithium ion rechargeable battery			
<b>Section 2 (Hazardous Ingredients / Identity Information)</b>			
Ingredient	Content	CAS NO	
Lithium Cobalt Nickel Manganese Oxygen	35.76%	182442-95-1	
Polyvinylidene fluoride	1.01%	24937-79-9	
Carbon	23.49%	7440-44-0	
Aluminum foil	8.55%	7429-90-5	
Copper foil	14.76%	7460-50-8	
Polypropylene	1.36%	9003-07-0	
Lithium hexafluorophosphate	2.57%	21324-40-3	
Ethylene carbonate	5.32%	96-49-1	
Dimethyl carbonate	6.61%	616-38-6	
Raney Nickel	0.57%	7440-02-0	
<b>Section 3 – Physical/ Chemical Characteristics</b>			
Boiling Point	N.A.	Specific Gravity(H <sub>2</sub> O=1)	N.A
Vapor Pressure(mm.Hg)	N.A.	Melting Point	N.A
Vapor Density(AIR=1)	N.A.	Evaporation Rate(Butyl Acetate)	N.A
Solubility in Water	N.A.		
Appearance and Odor	Prismatic Shape, odorless		
<b>Section 4 – Hazard Classification</b>			
Classification			
N.A.			
<b>Section 5 – First Aid Measures</b>			
First Aid Procedures			
<input checked="" type="checkbox"/> If electrolyte leakage occurs and makes contact with skin, wash with plenty of water immediately.			
<input checked="" type="checkbox"/> If electrolyte comes into contact with eyes, wash with copious amounts of water for fifteen minutes, and contact a physician.			
<input checked="" type="checkbox"/> If electrolyte vapors are inhaled, provide fresh air and seek medical attention if respiratory irritation develops. Ventilate the contaminated area.			

**Section 6 – Precautions for incidental leakage**

Incidental leakage: To breath steam and touch the liquid empty-handed are avoided (See Part 4)

Disposal method: To set up special disposal area and arrange the specially trained persons to prevent the leakage with barilla or calces is recommended. The veil filtered by NIOSH certified acid gas or automatic oxygen feeder must be worn. The leaked battery, barilla and baking soda must be disposed as dangerous substance.

Other : Take reference for the management regulation of reaction to emergency item 138, which is concerned about the battery ejectable explosions.

**Section 7 – Handling and Storage**

Safe handling and storage advice

- Batteries should be handled and stored carefully to avoid short circuits.
- Do not store in disorderly fashion, or allow metal objects to be mixed with stored batteries.
- Never disassemble a battery.
- Do not breathe cell vapors or touch internal material with bare hands.
- Keep batteries between -30 centigrade and 35 centigrade for prolong storage.

**Section 8 – Fire and Explosion Hazard Data**

FlashPoint(Method Used)	IgnitionTemp.	FlammableLimits	LEL
N.A.	N.A.	N.A.	N.A.

Extinguishing Media

Carbon Dioxide,Dry Chemical or Foam extinguishers

Special Fire Fighting Procedures

N.A.

Unusual Fire and Explosion Hazards

Do not dispose of battery in fire - may explode.

Do not short-circuit battery-may cause burns.

**Section 9 –Accidental Release or Spillage**

Steps to Be Taken in Case Material is Released or Spilled

Batteries that are leakage should be handled with rubber gloves.

Avoid direct contact with electrolyte.

Wear protective clothing and a positive pressure Self-Contained Breathing Apparatus(SCBA).

**Section 10 – Stability and Disintegrant**

**Stability:** Stable under conditions described in Section 7

To be avoided: Higher than 150°C , long time on the high humidity environment.

Incompatibility: N/A

Dangerous disintegrant: Carbon Dioxide, Hydrogen Fluoride

Danger of Polymer: not exist

Other: N/A

**Section 11 –Exposure Controls/Person Protection**

Occupational Exposure Limits: LTEP STEP

	N.A.	N.A
Respiratory Protection (specify type)	N.A.	
Ventilation	Local Exhausts N.A.	Special N.A
	Mechanical(General) N.A.	Other N.A
Protective Gloves	N.A.	Eye Protection N.A.
Other Protective Clothing or Equipment	N.A	
Work/Hygienic Practices	N.A	
<b>Section 12 – Eco Information</b>		
N.A		
<b>Section 13 – Disposal Precautions</b>		
Dispose of batteries according to government regulations.		
<b>Section 14 – Requirement for transportation</b>		
Testing Reference: UN Recommendations on the Transport of Dangerous Goods,Chapter 3.3,Special Provisions UN Manual of Tests and Criteria, Part 3,sub-section 38.3.		
All Cham Lithium ion batteries comply with the necessary testing requirements under the UN Manual of Tests and Criteria as referenced in the following transportation regulations.		
<ol style="list-style-type: none"> <li>1. UN recommendations on the Transport of Dangerous Goods Model Regulations.</li> <li>2. U.S. Department of Transportation hazardous materials regulation(HMR).</li> <li>3. International Civil Aviation Organization(ICAO) Technical Instructions.</li> <li>4. International Air transport Association(IATA) Dangerous Goods Regulation, and</li> <li>5. International Maritime Dangerous Goods(IMDG)code.</li> </ol>		
Cham Batteries are exempted from these regulations since they meet all UN Testing requirements and contain no more than 8 grams of equivalent lithium content (See 49 CFR 173.185 of the U.S. HMR, and IATA Dangerous Goods Regulations, and Special Provision 188 of the IMDG Code and UN model Regulations.		
<u>Equivalent Lithium Content Calculation:</u>		
Under the UN Manual of Tests and Criteria (ST/SG/AC.10/11/Rev.3),to determine the equivalent lithium content of the lithium ion cell (and battery),multiply the rated capacity in ampere-hours of the cell by 0.3.(Under this formula,every ampere-hour in a lithium ion cell would be equivalent to 0.3 grams of lithium metal)		
<u>Example:</u> A lithium ion cell in a battery pack may have a rated capacity of 2.2 ampere-hours.Applying a conversion factor of 0.3, a battery pack with 2 of those cells contains 1.32 grams of equivalent lithium content.(2.2*0.3*2=1.32 grams of equivalent lithium content)		
Batteries should be packaged in accordance with these transportation regulation.It is especially important to		

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ensure that batteries are packed in such a way to prevent short circuits.

Calculation of Watt-hour:  $Wh = mAh/1000 * Volts$   $Wh = Ah * Volts$

All Cham Batteries are meet the requirement of PI965-PI967, the watt-hour rating is below 100Wh.

**Section 15 – Adjusted information**

Special requirement be according to the local regulatory.

**Section 16 – Other information**

The data in this Material Safety Data Sheet relates only to the specific material designate herein.