



## MATERIAL SAFETY DATA SHEET

### 1. Identification of the Substance or Preparation and Company

Product Identification: Lithium-Ion Battery

Rechargeable Battery Pack:7S5P

Freerider P/N:PA04-A700-C

Manufacturer: FreeRider Corporation

FreeRider Corporation

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No. 22, Bengong 5<sup>th</sup> Road, Gangshan Dist.,  
Kaohsiung City, 820, Taiwan

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### 2. Composition / information on ingredients

2-1 Substance: Lithium Ion Battery

2-2 CAS number: Not specified

2-3 Cases: **Plastic**

Not dangerous

2-4 Printed Circuit Board Assembly

Not dangerous

2-5 Lithium Ion Cell:

Ingredient Name	Content	CAS#
Carbon ( C )	16.15%	1333-86-4
Lithium Iron Phosphate LiMn <sub>2</sub> O <sub>4</sub>	40.98%	12057-17-9
Lithium Hexafluorophosphate (LiPF <sub>6</sub> )	1.97%	21340-40-3
Organic Carbonates(EC/EMC/DEC)	13.74%	N/A
Polyvinylidene Fluoride (PVDF)	1.63%	24937-79-9
PP+PE	4.2%	9003-07-0 9002-88-4
Copper (Cu)	13.36%	7440-50-8
Aluminum (Al)	6.07%	7429-50-5
Nickel	0.25%	7440-02-0



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### 3. Hazard Identification

Do not short circuit, recharge, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion. The Lithium-Ion batteries described in this Product Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer.

Under normal conditions of use, the electrode materials and liquid electrolyte they contain are not exposed to the outside, provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery containers. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/explosion/fire may follow, depending upon the circumstances.

### 4. First-aid measures

#### 1) First-aid method for different exposure routes

Inhalation	Not anticipated. If battery is leaking, contents may be irritating to respiratory passages. Remove to fresh air. Contact physician if irritation persists.
Skin	Not anticipated. If battery is leaking, irrigate exposed skin with copious amounts of clear, tepid water for at least 15 minutes. If irritation, injury or pain persists, consult a physician.
Eye Contact	Not anticipated. If battery is leaking and material contacts eyes, flush with copious amounts of clear, tepid water for at least 30 minutes. Contact physician at once.
Ingestion	Not anticipated. Consult a physician immediately for treatment.

#### 2) IF EXPOSURE TO INTERNAL MATERIALS WITHIN CELL DUE TO DAMAGED OUTER CASING, THE FOLLOWING ACTIONS ARE RECOMMENDED

### 5. Fire-fighting measures

In case of fire where lithium ion battery is present, flood the area with water. If any battery is burning, water may not extinguish them, but will cool the adjacent battery and control the spread of fire. CO<sub>2</sub>, dry chemical, and foam extinguishers are preferred for small fires, but also may not extinguish burning lithium ion battery. Burning battery will burn them out. Virtually all fires involving lithium ion battery can be controlled with water. When water is used, however, hydrogen gas may be evolved which can form an explosive mixture with air. LITH-X (powdered graphite) or copper powder fire extinguishers, sand, dry ground dolomite or soda ash may also be used. These materials act as smothering agents.

Fire fighters should wear self-contained breathing apparatus. Burning lithium ion battery can produce toxic fumes including HF, oxides of carbon, aluminum, lithium, copper, and cobalt. Volatile phosphorus



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pentafluoride may form at a temperature above 230° Fahrenheit.

### 6. Accidental release measures

On Land	Place material into suitable containers and call local fire/police department.
In Water	If possible, Remove from water and call local fire/police department.

### 7. Handling and storage

Handling	Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non conductive (i.e. plastic) trays.
Storage	Store in a cool (preferably below 30°C) and ventilated area, away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 100°C may result in battery leakage and rupture. Since short circuit can cause burn, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.
Other	Follow Manufacturers recommendations regarding maximum recommended currents and operating temperature range. Applying pressure on deforming the battery may lead to disassembly followed by eye, skin and throat irritation

### 8. Exposure controls / personal protection

Engineering Controls	Keep away from heat and open flame. Store in a cool dry place.
Personal Protection:	
Respirator	Not required during normal operations. SCBA required in the event of a fire.
Eye/Face Protection	Not required beyond safety practices of employer.
Gloves	Not required for handling of battery.
Foot Protection	Steel toed shoes recommended for large container handling.



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9. Physical and chemical properties	
State	Solid
Odor	N/A
PH	N/A
Vapor pressure	N/A
Vapor density	N/A
Boiling point	N/A
Solubility in water	Insoluble
Specific gravity	N/A
Density	N/A

10. Stability and reactivity	
Reactivity	None
Incompatibilities	None during normal operation. Avoid exposure to heat, open flame, and corrosives.
Conditions to Avoid	Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

11. Toxicological Information	
This product does not elicit toxicological properties during routine handling and use.	
Signs & symptoms	None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation
Inhalation	Lung irritant.
Skin contact	Skin irritant
Eye contact	Eye irritant
Ingestion	Tissue damage to throat and gastro-respiratory tract if swallowed.
Medical conditions generally aggravated by exposure	In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.



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12. Ecological Information	
Mammalian effects	None known if used/disposed of correctly.
Eco-toxicity	None known if used/disposed of correctly.
Bioaccumulation potential	None known if used/disposed of correctly.
Environmental fate	None known if used/disposed of correctly.

13. Disposal Consideration
<p>Regulations and laws pertaining to the recycling and disposal of lithium ion batteries vary from country to country as well as by state and local governments. The European governments have more strict regulations on the disposal of rechargeable batteries than the USA and Canada. You will need to check the laws and regulations where you live. For North America, the Rechargeable Battery Recycling Corporation website can help you locate a facility <a href="http://www.rbrbc.org">www.rbrbc.org</a>.</p>

14. Transport Information			
<p>Regulations specifically applicable to the product : International Air Transport Association (IATA) Dangerous Goods Regulations (54<sup>th</sup> Edition).            Section IA of Packing Instruction 965, 966, 967 for Lithium Ion Battery.            Special Provisions A88, A99, A154 and A164, UN3480 (Li-ion Batteries) and UN3481 (Li-ion Batteries with equipment)            US Department of Transportation (DOT) 49 code of Federal Regulations <b>【USA】</b>            International Civil Aviation Organization (ICAO) Technical Instructions (2013-2014 Edition)            Transport Regulations for Sea Transport IMDG Code (2012 Edition) Class 9 exemptions            , sub-section 38.3 , 1.2m Drop )</p>			
No	ITEMS	RESULT	REMARKS
1	Altitude Simulation	Pass	
2	Thermal Shock	Pass	
3	Vibration	Pass	
4	Shock	Pass	
5	External Short	Pass	
6	Impact	Pass	
7	Overcharge	Pass	
8	Forced Discharge	N/A	For cell only
9	1.2m Drop Test	N/A	



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### 15.Regulatory Information

Local hazardous waste disposal laws.

This product is made from materials with no detectable mercury.

### 16.Other Information

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation. This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.