

## MATERIAL SAFETY DATA SHEET

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

Product Identification: Rechargeable Lithium Battery Module

Rechargeable Battery Pack : 7S5P

Trademark: STL

Customer Model Name:77172578R

Manufacturer:

STL Technology Co., Ltd.

No.1 West 15th Street Kaohsiung 806, Taiwan TEL: 886-7-8411501 FAX: 886-7-8111314

For Chemical Emergency:

Call CHEMTREC

Domestic North America 1- 800-424-9300

International, Call 1-703-527-3887

### 2. Composition / information on ingredients:

2-1 Substance: Lithium Ion Battery

2-2 CAS number: Not specified

2-3 Cases:ABS

Not dangerous

2-4 Printed Circuit Board Assembly

Not dangerous

2-5 Lithium Ion Cell:

Panasonic NCR 18650 PF / 2900mAh

Portion	Material name	Concentration range (wt %)
Positive electrode	Lithium transition metal oxidate ( $\text{Li}[\text{M}]_m[\text{O}]_n * 2$ )	20~60
Positive electrode's base	Aluminum	1~10
Negative electrode	Carbon	10~30
Negative electrode's base	Copper	1~15
Electrolyte	Organic electrolyte principally involves ester carbonate	5~25
Outer case	Aluminum, iron, aluminum laminated plastic	1~30

\*1 Not every product includes all of these materials.

\*2 The letter M means transition metal and candidates of M are Co, Mn, Ni and Al. One compound includes one or more of these metals and one product includes one or more of the compounds. The letter m and n means the number of atoms.

### 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.

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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 pent fluoride 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.

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### 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.
- This package must be handled with care and a flammability hazard exists, if the package is damaged.
- Do not damage or mishandle this package. If the package is damaged. The package must be inspected and if necessary , batteries must be repacked so as to prevent short circuit.

Storage: Store in a cool dry place 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.

### 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.

**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.

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### 13. Disposal Consideration:

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 [www.rbrc.org](http://www.rbrc.org).

### 14. Regulatory Information:

Local hazardous waste disposal laws.

This product is made from materials with no detectable mercury.

### 15. Transport Information:

Nominal Voltage(DCV)	Nominal Capacity(mAh)	Power(Wh)
25.2	14500	365.4

With regard to air and maritime transport, the following regulations are cited and considered:

-The International Air Transport Association (IATA) Dangerous Goods Regulations(56<sup>th</sup> Edition 2015 ,Special Provisions A88, A154,A164 for UN 3480/3481 Lithium Ion Battery & Regulations 56<sup>th</sup> edition Packing Instruction 965 Section IA is applied.)

-The International Maritime Dangerous Goods(IMDG) Code (Edition 2012 ,Special Provisions 188,230,310&957 for UN3480/3481 Lithium Ion Battery , Packing Instruction P903 for lithium ion batteries.)

-US Department of Transportation (DOT) 49 code of Federal Regulations [USA] International Civil Aviation Administration (ICAO).

There is no hazards in accordance with the UN recommendations tests ( Manual of Tests and Criteria , Part III , sub-section 38.3 , 1.2m Drop )

No	ITEMS	RESULT	REMARKS
1	Altitude Simulation	Pass	
2	Thermal Shock	Pass	
3	Vibration	Pass	
4	Shock	Pass	
5	External Short	Pass	
6	Impact/Crush	Pass	For cell only
7	Overcharge	Pass	
8	Forced Discharge	Pass	For cell only

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UN number: UN 3480

Packing group: II

ADR Class: Class 9

### 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.