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MATERIAL SAFETY DATA SHEET

Product Name : Lithium-polymer battery
Model : PL702427 – 3.7V- 450mAh

Approved By	Checkup
Chen ZhenYing	Wang Yong
DATE: 29 Jan, 2019	DATE: 29 Jan, 2019

MATERIAL SAFETY DATA SHEET

Revision:1.0

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION: Lithium-polymer battery

Commercial product name: PL702427

Nominal Voltage: 3.7V

Nominal capacity: 450mAh

Wh rating: 1.665Wh

MANUFACTURER: ChangHong Grand-Pro Tech Co.,Ltd.

ADDRESS: Intersection of Shihu Ave.and Linjing 2nd Rd.SuXian District, Chenzhou, Hunan,China.

valid period: At the end of 2019

Tel: (86)735-2668188

Fax: (86)735-2668799

**2. COMPOSITION INFORMATION**

INGREDIENTS	%	CAS NUMBER
Lithium Cobalt Oxide (LiCoO ₂)	38.71%	12190-79-3
Carbon (Graphite)	19.73%	7440-11-0
Electrolyte (LiPF ₆ /EC/DMC/EMC)	16.19%	21324-40-3 /96-49-1 /616-38-6 / 623-53-0
Aluminum	4.65%	7429-90-5
Copper	10.22%	7440-50-8
Hexafluoropropylene-Vinylidene-Fluoride Copolymer	7.84%	9011-17-0
PP/PE/PET	2.63%	

3. HAZARDS IDENTIFICATION

Emergency Overview (including Signs and Symptoms, Route(s) of Entry, etc.)

Intact batteries present no specific hazards.

Acute Health Hazards (e.g., Inhalation, Eye Contact, Skin Contact, Ingestion, etc.):

Burning batteries: AVOID inhalation of toxic fumes. Burning batteries emit toxic fumes, which are irritating to the lungs.

Leaking batteries: AVOID exposure to leaking electrolyte, it can cause severe irritation and/or damage to the skin, mucous membrane or eyes.

Chronic Health Effects (e.g., Carcinogenicity, Teratology, Reproduction, Mutagenicity, etc.):

Cobalt: Suspected human carcinogenic agent.

Medical Conditions Generally Aggravated by Exposure: None.

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4. FIRST AID MEASURES

INGESTION

If swallowed, obtain medical attention immediately.

INHALATION

If battery is burning, leave the area immediately. If exposed to fumes, seek medical attention promptly.

EYE CONTACT

Rinse eyes with water for 15 minutes and seek medical attention.

SKIN CONTACT

If battery electrolyte leaks on to the skin flush the affected area for at least 15 minutes with clean water. DO NOT attempt to neutralize. Seek medical attention promptly.

INGESTION

Drink milk/water and induce vomiting; seek medical attention.

5. FIRE FIGHTING MEASURES

Flammable Properties: N/A

Flashpoint: Method:

Autoignition Temperature:

Flammable Limits: N/A

Lower flammable limit: Upper flammable limit:

Hazardous Combustion Products: Burning batteries may emit acrid smoke irritating fumes, and toxic fumes of fluoride.

Extinguishing Media: Carbon dioxide (CO₂) or dry chemical fire extinguisher, 10-B: C.

Fire Fighting Instructions:

Personnel: Fight the fire in a defensive mode, while exiting the area. When using a CO₂ fire extinguisher, DO NOT re-enter the area until it has been thoroughly ventilated (i.e., purged) of the CO₂ extinguishing agent.

Firefighters: Use a self-contained breathing apparatus (SCBA).

6. ACCIDENTAL RELEASE MEASURES

Small Spill: If batteries show signs of leaking, AVOID skin or eye contact with the material leaking from the battery. Use chemical resistant rubber gloves and non-flammable absorbent materials for clean-up.

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

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Handling: Recharge batteries IAW methods specified in applicable technical manuals.

DO NOT:

- ☐ Overcharge this battery.
- ☐ Abuse, mutilate or short circuit the battery.

Storage: Gain approval for storage areas from the Installation Fire Department. Store batteries in a cool

(i.e., ☐ 130☐ F), dry and well ventilated area.

DO NOT:

- ☐ Store batteries in direct sunlight or under hot conditions.
- ☐ Smoke and keep batteries away from open flame or heat.
- ☐ Store batteries in the same stacks with hazardous materials.
- ☐ Store batteries in office areas, or other areas where personnel congregate.

Work/Hygienic Practices: Thoroughly wash hands after cleaning-up a battery spill (i.e., leaking or venting batteries). NO eating, drinking or smoking in battery storage areas.

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 cells.

Foot protection: Steel toed shoes recommended for large container handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point @ 760 mm Hg (°C): NA

Vapor Pressure (mm Hg @ 25°C): NA

Vapor Density (Air = 1): NA

Density (grams/cc): NA

Percent Volatile by Volume (%): NA

Evaporation Rate (Butyl Acetate = 1): NA

Physical State: NA

Solubility in Water (% by Weight): NA

pH: NA

Appearance and Odor: geometric solid object

10. STABILITY AND REACTIVITY

Stable or unstable: Stable

Incompatibility (Materials to avoid) : NA

Hazardous decomposition products: NA

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Decomposition temperature (0°F): NA

Hazardous polymerization: Will Not Occur

Condition to Avoid: Avoid electrical shorting

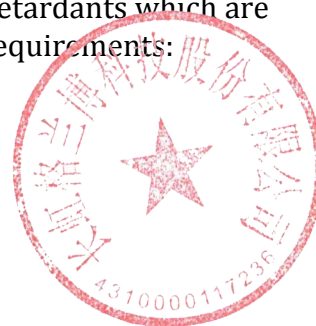
11. TOXICOLOGICAL INFORMATION

This product does not elicit toxicological properties during routine handling and use.

Sensitization	Teratogenicity	Reproductive toxicity	Acute toxicity
NO	NO	NO	NO

This product does not contain any kinds of the following substances and halogen-type flame retardants including Chlorine and Bromide type harmful flame retardants which are listed in Appendix of TCO documents and relevant international ECO requirements:

Polybromated Biphenyls (PBB)
Polybromated Biphenyl Ethers (PBBE)
Polybromated Biphenyl Oxides (PBB0)
Polybromated Diphenylethers (PBDE)
Polychlorinated Biphenyl (PCB)
Polychlorinated Diphenylethers (PCDE)
Tetrabromophenol A (TBBPA)
Asbestos, Antimonytrioxide, Dioxine



None of the following substances will be exposed, leaked, or emitted during transportation, storage or any operation and any temperature condition:

Chlorinated Fluorohydrocarbon (FCKW)
Acrylonitrile
Styrol Phenol Benzol
Mercury of greater than 0.0001 wt% for alkaline battery
Mercury of greater than 0.0005 wt% for other battery
Lithium content of greater than 0.5g/battery cell Cadmium, lead, and other

harmful heavy metal

This product does not contain mercury and lithium-metal.

Mercury content:<

Lithium-Ion content: <

If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

12. ECOLOGICAL INFORMATION

Some materials within the cell are bioaccumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

13. DISPOSAL INFORMATION

Recommended methods for safe and environmentally preferred disposal :

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Product(waste from residues)

Do not throw out a used battery cell. Recycle it through the recycling company.

Contaminated packaging

Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery cell contaminates, dispose as industrial wastes subject to special control.

RCRA Waste Code: Nonregulated

Dispose of according to all federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

For the international transport of lithium batteries, they must comply with these regulations: the International Maritime Dangerous Goods (IMDG) Code by International Maritime Organization (IMO), Dangerous Goods Regulations (DGR) by International Air Transport Association (IATA) and Technical Instructions for the Safe Transport of Dangerous Goods by Air (TI) by International Civil Aviation Organization (ICAO). These regulations are based on the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria. Lithium batteries which meet the requirements of UN38.3 (UN Manual of Tests and Criteria, Part III, subsection 38.3) could be transported by air and by sea as ordinary goods, otherwise should be transported according to Class 9, Packing Group II hazardous goods. As the published of the UN Recommendations on the Transport of Dangerous Goods, all these regulations have added some new contents to regulate the transport of lithium ion batteries. We regard to air transport, the following regulations are cited and considered:

- A、 For lithium ion batteries, UN ID number is 3480 or Lithium Ion Batteries contained in equipment or Lithium Batteries packed with equipment, UN ID number 3481, Transport hazard No:9.
- B、 The International Air Transport Association(IATA) Dangerous Goods Regulations(60TH Edition 2019: complies with current IATA packing instruction of PI965-967).
- C、 For transported by air, Lithium-ion Cells/Batteries shipped as "Not Restricted" Cargo: Must comply with section II of P1965- P1967; For cells, the Watt-hour rating should not be more than 20Wh; For batteries, the Watt-hour rating should not be more than 100Wh. Watt- hour rating must be marked on the outside of the battery case (marked by manufacturer). (Except those manufactured before 1 January 2009, which may be transported without this marking until 31 December 2014).
- D、 Each consignment must be accompanied with a document such as an air waybill with an indication. For those Lithium ion cells/ batteries contained in equipment, the equipment must be equipped with an effective means of preventing accidental activation. The telephone number for additional information for Grand-Pro cells is +86-735-2668188.
- E、 Quantity per package shall not exceed 10kg.
- F、 Each package must be capable of withstanding a 1.2m drop test in any orientation

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without damage of cells or batteries contained therein.

G、Lithium batteries which meet the requirements of A154 could be transported by air, (A154 Lithium batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport.)

H、Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit.

I、Comply with SP188 of Imdg.

Mode of transport: to air, sea, railway, highway-based.

Manual of Test and Criteria (38.3 Lithium battery)		Test Results	Remark
No.	Test Item		
T1	Altitude Simulation	Pass	
T2	Thermal Test	Pass	
T3	Vibration	Pass	
T4	Shock	Pass	
T5	External Short Circuit	Pass	
T6	Impact	Pass	
T7	Overcharge	Pass	For Pack Only
T8	Forced Discharge	Pass	For Pack Only

15. REGULATORY INFORMATION

Non-hazardous

16. OTHER INFORMATION

The information above is believed to be accurate and represents the best information currently available to us. However, Grand-Pro makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration. This material safety data sheet provides guidelines for the safe handling and use of this product, it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.

*****The End*****