

MATERIAL SAFETY DATA SHEET	24 Hour Emergency Contact +86-13380369206 NOTE: National Response Center emergency number to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.
IMPORTANT: Provide this information to employees, customers, and users of this product. Read this MSDS before handling or disposing of Honcell Lithium-ion Polymer Batteries. It is covered by the OSHA Hazard Communication Standard and this document has been prepared in accordance with requirements of this standard.	

SECTION 1: Company Identification

Company: Shenzhen Honcell Energy Co.,Ltd.

Brands: Honcell, HCP (LiPO), HCG (High Drain), HCF (LiFePO4)

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SECTION 2: Product Identification

Product Name: Honcell Lithium-ion Polymer Batteries

Battery Type: Rechargeable Lithium Polymer (LiPO)

DOT Description: Lithium Ion (Polymer); Secondary Battery; Rechargeable

SECTION 3: Hazardous Ingredients / Identity Information

Components	CAS No.	Approximate Percentage of Total Weight
Aluminum	7429-90-5	5-8%
Aluminum Packaging Foil	7429-90-5	5-15%
Carbon (Graphite Powder)	7782-42-5	10-30%
Copper	7440-50-8	6-14%
Lithium Cobalt Oxide	12190-79-3	20-50%
Lithium Salts		1-5%
Nickel	7440-02-0	0.5-2%
Organic Electrolyte, consisting of LiPF ₆ and organic Carbonate		10-20%
Polymer		2-10%

SECTION 4: Physical/Chemical Characteristics

Appearance: 3 dimensional rectangular solid object with silver outside covering and two wires [positive "+" (red) and negative "-" (black)].

SECTION 5: Emergency and First Aid Procedures

In the event of accidental battery material contact due to a damaged or ruptured battery cell please follow these emergency guidelines:

Eye Contact: Immediately flush eyes with water for 15 minutes and seek medical attention.

Skin Contact: Immediately wash affected area with soap and water.

Inhalation of Gases: Immediately move affected victims to fresh air or well ventilated areas and seek medical attention.

Ingestion: Seek medical attention immediately.

SECTION 6: Fire Fighting Measures

Extinguishing Media: CO₂, Dry chemicals, water or Foam Extinguishers
Fire-Fighting Procedures: Use a positive pressure self-contained breathing apparatus if batteries are involved in a fire. Full protective clothing is necessary. During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.

Unusual Fire and Explosion Hazards: Toxic gases (HF, PF₆) will be formed if cells or battery are involved in a fire. Cells or battery may flame or leak potentially hazardous organic vapors if exposed to excessive heat, fire or over-voltage conditions. Damaged or opened cells or batteries may result in rapid heat and the release of flammable vapors. Vapors may be heavier than air and may travel along the ground or be moved by ventilation to an ignition source and flash back.

SECTION 7: Accidental Release Measures

The materials contained within the batteries can only be released under abusive conditions. Use a shovel or broom to cover the battery with dry sand and place in a non-flammable, well ventilated area.

SECTION 8: Handling and Storage

Batteries should never be opened, destroyed or incinerated as doing so may lead to leakage, rupture, or fire and the materials contained inside may be released.

Batteries should only be recharged using approved chargers and approved procedures.

Do not directly heat, throw in fire or solder directly.

Do not mix with other types of batteries or other battery sizes or capacities.

Batteries should be separated from other materials and stored in a non-combustible, non-flammable, well ventilated, sprinkler-protected structure with sufficient clearance between walls and batteries.

Do not place batteries near heating equipment, nor expose to direct sunlight for long periods of time.

Do not store batteries above 60°C or below -32°C. Store batteries in a cool (below 21°C, dry area that is subject to little temperature change. Elevated temperatures can result in reduced battery service life. Battery exposure to temperatures in excess of 130°C will result in the battery venting flammable liquid and gases.

Do not store batteries in a manner that allows terminals to short circuit. More than a momentary short circuit will cause temporary battery voltage loss until the battery is subjected to a charge.

SECTION 9: Personal Protection

No controls are required for handling batteries that have not been damaged.

Personal protective equipment for damaged batteries should include chemical resistant gloves and safety glasses. In the event of a fire, SCBA should be worn along with thermally protective outer garments.

SECTION 10: Reactivity and Stability Data

Extended short-circuiting creates high temperatures in the cell. High temperatures can cause burns in skin or cause the cell to flame.

Avoid reversing battery polarity within the battery assembly. To do so may cause cell to flame or to leak.

Do not heat above 60°C or incinerate.

Do not puncture, disassemble, short circuit, deform, crush or mutilate.

SECTION 11: Toxicological Information

Irritancy: The electrolytes contained in this battery can irritate eyes with any contact. Prolonged contact with the skin or mucous membranes may cause irritation.

SECTION 12: Ecological Information

Not Known

SECTION 13: Transport Information

These batteries have been tested to Section 38.3 of 'UN Manual of Tests and Criteria'. The amount of Lithium contained in these batteries is below the limits set by the Department of Transportation (DOT) in Section 49CFR173 and IATA. These can be shipped with the following label:

LITHIUM POLYMER (LIPO) RECHARGEABLE BATTERIES INSIDE
(No Lithium Metal)

Do not damage or mishandle this package
If package is damaged, batteries must be quarantined, inspected and repacked.
For emergency information, call HONCELL 24 Hour Emergency Line +86-13380369206

Transport Method	International Conventions	Ship As	Approved
Air	International Air Transportation Association (IATA)	Non-Hazardous	Yes
Sea	International Maritime Dangerous Goods (IMDG)	Non-Hazardous	Yes

SECTION 14: Regulatory Information

The international transportation of lithium cells and batteries is regulated by the International Civil Aviation Organization (ICAO) Technical Instructions and corresponding International Air Transport Association (IATA) Dangerous Goods Regulations, and the International Maritime Dangerous Goods (IMDG) Code.

USA: This MSDS meets/exceeds OSHA requirements.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

International: This MSDS conforms to European Union (EU), the International Standards Organization (ISO) and the International Labour Organization (ILO).

PRODUCT USAGE INSTRUCTIONS

SECTION 15: Safety During Use Instructions

1. Always use a charger specifically designed for Lithium Polymer batteries. Never use NiCd or NiMH type chargers to charge LiPO batteries. Failure to do so will damage the batteries and may cause fire and personal injury.
2. Always charge batteries in a fire proof container. Do not charge batteries on wood, cloth, carpet, in your model, or on any other flammable material. Keep a chemical fire extinguisher nearby in case of fire.
3. Never leave batteries unattended while charging. Always observe batteries when charging so that you may react quickly to any problems that may occur.
4. If a battery is deformed, swollen or appears damaged, DO NOT CHARGE. Follow the disposal instructions below to properly and safely dispose the battery.
5. Any time you have an accident with your model or if the battery swells "balloons" or if the battery exceeds temperature guidelines, follow these safety steps:
 - a. Immediately remove the battery pack from your model or charger.
 - b. Place the battery in a non-flammable, well ventilated area.
 - c. Observe the battery for 30 minutes from a safe distance.
 - d. After 30 minutes, if the pack appears stable, is not swollen and does not show any signs of damage, return the battery pack to normal use with caution.
6. Do not let exposed battery wires touch each other. This may cause the battery to short and potentially cause a fire.
7. Store your batteries in a cool, dry place between 40-80 F° / 4-26 C°.

8. Do not assemble unmatched or dissimilar LiPO cells.
9. Store battery packs out of the reach of children and pets.

SECTION 16: Safety During Charging Instructions

1. Honcell Lithium Polymer Power Cells feature a separate balancing plug that isolates each cell in a pack and charges it independently. This ensures that all cells peak equally and discharge at the same rate during use preventing one or more cells from discharging past their safe low voltage cut off rating. The balancing plug can be identified by the multi wire Molex plug.
2. Charge each battery pack individually. Never charge battery packs in series. Charging packs in series may result in improper charger cell recognition and an improper charging rate that may lead to overcharging, cell damage and fire.
3. Always check to make sure that your charger settings match those listed on the battery pack label. Refer to the battery label for the proper cell count and charging amperage setting. Selecting a cell count or amperage charge rate other than the one listed on the battery pack will damage the battery and may cause a fire.
4. Make sure the battery connections are connected in the correct polarity. A wrong connection will damage the battery and may cause a fire.
5. Always check battery pack voltage before charging. Do not discharge LiPO batteries below 3.0 Volts per cell. The voltage of a typical LiPO cell at rest is 3.7 Volts. If the battery pack appears swollen or damaged, DO NOT attempt to charge it. Check the voltage and follow Step 1 from the Safety Guidelines section.
6. Do not charge at over 1C current. $C = \text{battery pack mAh capacity} \div 1000$. Divide the battery mAh capacity by 1000 to determine the proper charge rate. Example: $1200\text{mAh} \div 1000 = 1.20$ Amps. Charge Rate for Honcell LiPO Battery Packs, example:
 - a. 800mAh Capacity = 0.80 Amps
 - b. 1200mAh Capacity = 1.20 Amps
 - c. 2000mAh Capacity = 2.00 Amps
7. Do not peak charge to more than 4.2 Volts per cell. Example: A 2S Battery Pack contains two cells, therefore the peak voltage should not exceed 8.4 Volts.

8. Battery Temperature is critical. Please use the following guidelines:

- a. Charge Temp Range: 0-45°C
- b. Discharge Temp Range: -20°C-60°C
- c. Storage Temp Range: -10°C-+35°C

For optimum performance in cold climates, warm to 37°C before use.

9. If the battery exceeds the temperature guidelines as above, isolate the battery pack and follow Step 5 from the Guidelines & Warnings section.

SECTION 17: Safety During New Battery Break-In

1. New LiPO battery packs may require 12 or more charge/discharge cycles before the battery's optimum performance is reached.
2. During this time, it is recommended that the battery pack is not discharged over 7C. $7C = 7 \times 1C$, where $1C = \text{battery pack mAh capacity} \div 1000$.

Example: $[(1250\text{mAh} \div 1000) \times 7] = 8.75 \text{ Amps}$

Recommended Maximum Discharge Rates During Break-In Period

- a. 800mAh Capacity = 5.4 Amps
- b. 1200mAh Capacity = 8.4 Amps
- c. 2000mAh Capacity = 14 Amps

SECTION 18: Safety During Discharging

1. Never discharge a LiPO battery pack at more than the manufacturers recommended discharge rate.
2. The discharge rate is: $\text{Battery pack capacity (mAh)} \div 1000 \times \text{Pack C rating}$
 - a. Example for 15c packs: $(3200 \text{ mAh} \div 1000) \times 15c = 48 \text{ Amps}$
 - b. Example for 20c packs: $(2100 \text{ mah} \div 1000) \times 20c = 42 \text{ Amps}$

SECTION 19: Battery Disposal Instructions

1. Discharge battery pack to 2.5 Volts per cell or less.
2. Fill a bucket with enough water to submerge the battery pack completely.
3. Add salt to the water until no more salt will dissolve; the water is now saturated with salt.
4. Place the battery pack in the bucket and leave submerged in the salt water solution for 24 hours.
5. Remove the battery pack from the salt water and test the voltage.
6. If the voltage does not read 0.0 Volts, re-submerge and re-test until the voltage reads 0.0 Volts.
7. Once the battery pack has been discharged to 0.0 Volts, it is safe to dispose.
8. Dispose in according to local, state and country regulations.
9. These batteries do not contain any materials listed by the U.S. EPA that require special disposal requirements.

SECTION 20: Additional Information

The information contained herein is based on the data available to us and believed to be correct. However, Honcell Energy makes no warranty, expressed or implied. Users should consider the data only as a supplement to other information gathered through personal research and must make independent determinations of the suitability and completeness of information from all sources to ensure the proper use and disposal of these materials and the safety and health of employees and customers.