



杭州天丰电源股份有限公司
HANGZHOU SKYRICH POWER CO.,LTD.

SAFETY DATA SHEET

Section 1 - Chemical Product and Company Identification

PRODUCT NAME: Li Polymer battery

BATTERY TYPE: 12V9.6Wh;12V19.2Wh,12V24WH; 12V28.8Wh; 12V36Wh;
12V42Wh; 12V48Wh; 12V54Wh; 12V60Wh; 12V72Wh;
12V84Wh; 12V96Wh; 12V108Wh; 12V120Wh; 12V144Wh,
12V180Wh

MANUFACTURER: Hangzhou Skyrich Power Co., Ltd.
No.118, Linban Road, District of Gongshu, Hangzhou,
Zhejiang,China

Section 2 - Composition/Information on Ingredient

General Chemical Description: This chemical product is a mixture. Composition, Information on Ingredients:

INGREDIENTS	CONTENT (percent of total weight)	CAS No.	EINECS
LITHIUM IRON PHOSPHATE CARBON COATED (LiFePO ₄)	28%	15365-14-7	N/A
Carbon(Graphite)	12%	7782-42-5	231-955-3
PP	5%	9003-07-0	N/A
PVDF	2%	24937-79-9	N/A
PE	5%	9002-88-4	N/A
CMC	0.5%	9004-32-4	N/A
LiPF ₆	9%	21342-40-3	244-334-7

EC	9%	96-49-1	202-510-0
DMC	9%	616-38-6	210-478-4
Cu	13%	7440-50-8	231-159-6
Al	7%	7429-90-5	231-072-3
SBR	0.5%	9003-55-8	N/A

Case Material	CONTENT (percent of total weight)	CAS No.	EINECS
ABS	100%	9003-56-9	

Section 3 – Hazards/Health Identification

Intact batteries present no specific hazards. If batteries show signs of leaking, AVOID skin or eye contact with the material leaking from the battery. If battery catches fire, put out the fire by using dry chemical powder extinguisher.

Potential Health Hazards:

Eye: no particular hazards for proper use. It will cause severe irritation or chemical burns when batteries are broken.

Skin: no particular hazards for proper use. It will cause skin severe irritation by inhalation of EC and DMC or chemical burns when batteries are broken.

Inhalation: it will irritate breath system by being exposed to fumes when batteries are broken.

Ingestion: it is deleterious by swallowing battery. Broken batteries will cause severe chemical burns to mouth, esophagus and gastro enteric system.

Environment hazards: It will cause different harms to man and environment.

Burning and exploding hazards: when the battery is short-circuited, over charged or over heated, it may cause electrolyte of the battery leaked out or the battery exploding.

Section 4 - First Aid Measures

Caution! No effect under routine handling and use. If exposure to internal materials within cell due to damaged outer metal casing, the following actions are recommended.

Inhalation: If inhaled, remove from exposure and move to fresh air immediately. Rinse mouth and nose with water. Get medical aid immediately. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Skin: In case of contact, immediately flush skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing and shoes before reuse. Get medical aid immediately.

Eyes: Rinse immediately with plenty of water during at least 15-30 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses if easily possible. Get medical aid immediately.

Ingestion: Do not induce vomiting. If the injured is fully conscious: wash mouth out with water, then give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Most important acute and delayed symptoms/effects: See Part 11 for more information.

Protection of first-aiders: Use proper personal protective equipment as indicated in Part 8.

Note To Physicians: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

Extinguishing Media: For small, single battery fire, CO₂, chemical powder, or sand is better, water is suitable too. For large scale fire, water spray, or water foam is better.

Hazard properties: the battery may be over-heated by outside and interior short-circuit, and burning batteries may emit toxic fumes.

Hazardous Combustion products: metallic oxide, Carbon oxide (CO), Carbon dioxide (CO₂), etc.

Firemen safeguard: firemen should wear fire-fighting suits with a self-contained breathing apparatus



Specific Extinguishing Methods: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Move containers from fire area if this can be done without risk. Prevent run off from fire control dilution from entering streams or drinking water supply.

Section 6 - Accidental Release Measures

General information: employ proper protection establishment according to directions of part.8.

Person-related Safety Precautions: No action shall be taken involving any personal risk or without suitable training. Review part 5 and part 7 sections before proceeding with clean-up. Use proper personal protective equipment as indicated in Section 8. Appropriate ventilation. If electrolyte leaks or spills, do not touch or walk through electrolyte.

Measures for Environmental Protection: In the event of battery rupture, prevent skin contact and collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

Measures for Cleaning/Collecting: If battery casing is dismantled, small amounts of electrolyte may leak. Pack the battery including ingredients as described above. Then clean with water (diluted acetic acid may be helpful).

Section 7 - Handling and Storage

General Information: This product should be stored, handled and used in accordance with good industrial hygiene practices and in conformity with any legal regulation. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash hands, forearms and face thoroughly after

handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Handling:

Do not dispose in fire. Do not mix with other battery types. Use effective anti-short circuit measures. Do not connect improperly, or short circuit, which may result in overheating, explosion or leakage of cell contents. Accidental short circuit will bring high temperature elevation to the battery as well as shorten the battery life. Be sure to avoid prolonged short circuit since the heat can burn attendant skin and even rupture of the battery cell case. Battery bulk container, coins, metal jewelry, metal worktable, metal belt or other equipment for assembly battery may be the source for short circuit. Do not use organic solvents or other chemical cleaners on battery. Do not disassembly or decompose. Avoid contacting with water, avoid straight sunlight.

Storage:

Store in a cool, dry and clean area, but prevent condensation on cell or battery terminals. High temperature may damage the performance of the battery, cause leaking or rusting. Protect from physical damage and short circuits. To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery. Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries. Do not stack battery directly on another battery. Do not store batteries on electrically conductive surfaces.

Section 8 - Exposure Controls, Personal Protection

CAS No.	ACGIH (mg/m3)	NIOSH (mg/m3)	OSHA (mg/m3)
15365-14-7	None listed	None listed	None listed
7782-42-5	None listed	None listed	PEL-TWA 15
9003-07-0	None listed	None listed	None listed
24937-79-9	None listed	None listed	None listed
9002-88-4	None listed	None listed	None listed
9004-32-4	None listed	None listed	None listed
21342-40-3	None listed	None listed	None listed
96-49-1	None listed	None listed	None listed

616-38-6	None listed	None listed	None listed
7440-50-8	TLV-TWA 1(dust)	REL-TWA 1(dust)	PEL-TWA 1(dust)
7429-90-5	TLV-TWA 15(dust)	REL-TWA 10(dust)	PEL-TWA 10(dust)

Engineering Controls: General room ventilation is sufficient during normal use and handling. Do not install these batteries in sealed, unventilated areas. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Work/Hygienic Practices: Remove jewelry, rings, watches and any other metallic objects while working on battery. All tools should insulate to avoid the possibility of shorting connections. DO NOT lay tools on top of the battery. The work area should be equipped with the corresponding species and quantity of fire equipment and leakage emergency equipment.

Personal Protective Equipment:

Eyes: Under normal condition of use and handling no special protection is required for sealed Battery.

Skin: Under normal condition of use and handling no special protection is required for sealed Battery.

Clothing: Under normal condition of use and handling no special protection is required for sealed Battery.

Respirators: Under normal condition of use and handling no special protection is required for sealed Battery. Use appropriate respirator if airborne dust or mist concentrations exceed.

Personal Protective Equipment (In the Event of Battery Case Breakage): Always wear appropriate safety glasses with side shields or full face shield. Use appropriate gloves. Wear appropriate boots, apron or clothing. Use appropriate respirator.

Other Protection: No smoking or eating scene work. To maintain good health habits. Wash hands thoroughly after working and before eating.

Section 9 - Physical and Chemical Properties

BATTERY TYPE	Nominal Voltage	Rated Capacity	Watt Hour
12V9.6WH	12V	0.8Ah	9.6WH
12V19.2WH	12V	1.6Ah	19.2WH

12V24WH	12V	2Ah	24WH
12V28.8Wh	12V	2.4Ah	28.8Wh
12V36Wh	12V	3Ah	36Wh
12V42Wh	12V	3.5Ah	42Wh
12V48Wh	12V	4Ah	48Wh
12V54Wh	12V	4.5Ah	54Wh
12V60Wh	12V	5Ah	60Wh
12V72Wh	12V	6Ah	72Wh
12V84Wh	12V	7Ah	84Wh
12V96Wh	12V	8Ah	96Wh
12V108Wh	12V	9Ah	108Wh
12V120Wh	12V	10Ah	120Wh
12V144Wh	12V	12Ah	144Wh
12V180Wh	12V	15Ah	180Wh

Appearance Characters: Rectangular plastic casing with exposed terminals for electrical connections, odorless, solid battery.

Function: For motorcycle starting.

Solubility: Insoluble in water.

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal condition.

Possibility of hazardous reactions: When a battery cell is exposed to an external short-circuit, crushed, modification, high temperature, open flames, it will be the cause of heat generation and ignition.

Conditions to Avoid: Exposed to an external short-circuit, prolonged overcharge, crushed, modification, high temperature, open flames, incompatible materials, direct sunlight and high humidity.

Incompatibilities with Other Materials: Conductive materials, water, seawater, strong oxidizers and acids.

Hazardous Decomposition Products: Thermal decomposition may produce hazardous fumes of metal oxides, harmful gas and etc.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

Toxicological Information:

CAS NO.	RETCS
15365-14-7	None list
7782-42-5	MD9659600
9003-07-0	UD1842000
24937-79-9	None listed
9002-88-4	TQ3325000;KX3270000
9004-32-4	FJ5950000
21342-40-3	None listed
96-49-1	FF9550000
616-38-6	FG0450000
7440-02-0	QR5950000;QR6126100;QR6555000;QR7120000
7440-50-8	GL5325000;GL7440000;GL7590000
7429-90-5	BD0330000;BD1020000
9003-55-8	WL6478000
9003-56-9	AT6970000
15365-14-7	None list

Acute toxicity:

Ingredients: hydroxide methyl cellulose sodium

- LC50: >5800 mg/m³/4h (small rat, inhalation)
- LD50: >27 g/kg (small rat, to eat)

Ingredients: LiPF₆

- LD50: >1702 mg/kg (big rat, by mouth)

Ingredients: Ethylene carbonate

- LD50: >10000 mg/kg (big rat, by mouth)
- LD50: >3000 mg/kg (rabbit, by skin)

Ingredients: Dimethyl carbonate

- LD50: >6000 mg/kg (small rat, by mouth)

- LD50: >13000 mg/kg (big rat, by mouth)

Irritation: N/A

Carcinogenicity:

Ingredients: nickel

- LARC-2B: potential carcinogen
- ACGIH A5: non-human carcinogen

Other substances: not be listed under ACGIH, IARC, NTP

Potential Health Effects:

Eye: No effect under routine handling and use for sealed battery. Exposure to the electrolyte contained inside the battery may result in severe irritation and chemical burns.

Skin: No effect under routine handling and use for sealed battery. Exposure to the electrolyte contained inside the battery may result in chemical burns. Exposure to battery particulate may cause dermatitis.

Ingestion: No effect under routine handling and use for sealed battery. Harmful if swallowed the electrolyte contained inside the battery. Exposure to the electrolyte contained inside the battery may cause severe chemical burn to mouth, esophagus and gastrointestinal system.

Inhalation: No effect under routine handling and use for sealed battery. If battery is broken, inhale fume/dust may cause respiratory irritation, cough, shortness of breath or chemical burns.

Section 12 - Ecological Information

Ecological Toxicity: Not available.

Persistence and degradability: Not available.

Bioaccumulative Potential: Not available.

Mobility in Soil: Not available.

Water Pollution Classification, WGK: Not available.

Other adverse effects: Not available.

Other Information: If the battery is discarded into the environment, the harmful contents inside may be dangerous.

Section 13 - Disposal Considerations

The generation of waste should be avoided or minimized wherever possible. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Do not incinerate, since batteries may explode at excessive temperature. Refer to Part 7-Handling and Storage and Part 8-Exposure Controls/Personal Protection for additional handling information and protection of employees.

Section 14 – Transport Information

Li-Ion Battery comply with the UN Recommendations on the Transport of Dangerous Goods; IATA Dangerous Goods regulations, and applicable U.S. DOT regulations for the safe transport of Li-Ion Battery. the Li-Ion Battery have been tested under provisions of the UN Manual of Tests and Criteria, Part III, sub-section 38.3 and are classified as non-dangerous goods.

Lithium ion cell/battery :

lithium ion cell/battery = UN3480 with Section II of PI965

lithium ion cell/battery packed with equipment = UN3481 with Section II of PI966

Lithium ion cell/battery contained in equipment = UN3481 with Section II of PI967

Lithium ion :

Content in Watt-hour (Wh) AND

lithium ion cell = less than 20Wh per cell

lithium ion battery = less than 100Wh per battery

Transport fashion: Land transport ADR/RID (cross-broder)

Sea transport IMDG

Air transport ICAO-TI and IATA-DGR

Li-Ion Battery according to NEW PACKING INSTRUCTION 965-967 of IATA DGR 2014, 55RD Edition of transportation.

Section 15 - Regulatory Information

Regulatory Information: Reference to the local, national, US, EU, CA and international regulations.

CAS No.	TSCA	IECSC	DSL/NDL
15365-14-7	Unlisted	Unlisted	Listed in DSL
7782-42-5	listed	listed	Listed in DSL
9003-07-0	listed	listed	Listed in DSL
24937-79-9	Unlisted	listed	Listed in DSL
9002-88-4	listed	listed	Listed in DSL
9004-32-4	listed	listed	Listed in DSL
21342-40-3	Unlisted	Unlisted	Unlisted
96-49-1	listed	listed	Listed in DSL
616-38-6	listed	listed	Listed in DSL
7440-50-8	listed	listed	Listed in DSL
7429-90-5	listed	listed	Listed in DSL

The regulations following are specifically applied to the safe usage, production, storage, transport and load and unload for dangerous chemicals.

- The Regulations of Safe Management Regarding Dangerous Chemicals (issued by State Council at Feb. 16, 2011)
- The Rules of implementation of Safe Statute Regarding Dangerous Chemicals (No.667 ,1992)
- The Regulations of Safe Use of Dangerous Chemicals in Workplace(No.423,1992)
- The Regulations of Proposition 65 warning.

Section 16 - Other Information

Issue Department: Technical Department

Issue Date: 15/01/2018

Revision explanation:

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

