

# Safety Data Sheet

## Section 1 – Chemical Product and Company Identification

**PRODUCT NAME:** Lithium Ion Battery  
**BATTERY TYPE:** 12V 19.2Wh;12V24WH; 12V28.8Wh; 12V36Wh; 12V42Wh;  
 12V48Wh; 12V60Wh; 12V72Wh; 12V84Wh; 12V96Wh;  
**MANUFACTURER:** Hangzhou Skyrich Power Co., Ltd.  
 No.118, Linban Road, District of Gongshu, Hangzhou,  
 Zhejiang,China  
 TEL: 86-571-88140995



## 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 (LiFePO4)	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
LiPF6	9%	21342-40-3	244-334-7
EC	9%	96-49-1	202-510-0
DMC	9%	616-38-6	210-478-4
Copper (Cu)	13%	7440-50-8	231-159-6
Aluminum (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
PA66	70%	32131-17-2	
Glass fiber	30%	65997-17-3	

**Section 3 – Hazards/Health Identification**

**Classification**

Acute toxicity – Oral	Category 4
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1

This is a battery. In case of rupture: the above hazards exist.

Appearance: Solid

Physical state: Solid

Odor: No information available

**GHS Label elements, including precautionary statements**

**Danger**

**Hazard statements**

Intact batteries present no specific hazards. If battery case rupture or leak, below hazards may happen:

- Harmful if swallowed
- Causes severe skin burns and eye damage
- Suspected of causing cancer
- May cause respiratory irritation
- Causes damage to organs through prolonged or repeated exposure
- When the battery is short-circuited, over charged or over heated, it may cause electrolyte of the battery leaked out or the battery fire/explode



**Precautionary Statements – Prevention**

- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- Wear protective gloves/protective clothing/eye protection/face protection
- Wash face, hands and any exposed skin thoroughly after handling
- Do not eat, drink or smoke when using this product
- Do not breathe dust/fume/gas/mist/vapors/spray
- Use only outdoors or in a well-ventilated area

**Precautionary Statements – Response**

- Immediately call a POISON CENTER or doctor
- Specific treatment (see supplemental first aid instructions on this label)

**Eyes**

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing immediately call a POISON CENTER or doctor

**Skin**

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
Wash contaminated clothing before reuse

**Inhalation**

If inhaled: Remove person to fresh air and keep comfortable for breathing  
Immediately call a POISON CENTER or doctor

**Ingestion**

If swallowed: Call a POISON CENTER or doctor if you feel unwell  
Rinse mouth  
Do not induce vomiting

**Precautionary statements – Storage**

Store locked up  
Store in a well-ventilated place. Keep container tightly closed

**Precautionary statements – Disposal**

Dispose of contents/container to an approved waste disposal plant

## Section 4 - First Aid Measures

### Description of First Aid Measures

- |                                       |  |
|---------------------------------------|--|
| <b>General advice</b>                 | No effect under routine handling and use. If exposure to internal materials within cell due to damaged outer metal/plastic casing, the following actions are recommended.  |
| <b>Inhalation</b>                     | Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical advice/attention. |
| <b>Eye contact</b>                    | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.   |
| <b>Skin contact</b>                   | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical advice/attention.  |
| <b>Ingestion</b>                      | Do not induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.  |
| <b>Self-protection of first aider</b> | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Wear personal protective clothing (see section 8).   |

### Most important symptoms and effects, both acute and delayed

See Part 11 for more information.

### Indication of any immediate medical attention and special treatment needed

- |                           |  |
|---------------------------|--|
| <b>Note to Physicians</b> | Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high |
|---------------------------|--|

pulse pressure.

## Section 5 - Fire Fighting Measures

<b>Suitable Extinguishing Media</b>	Class D-Dry chemical powder, sand is suitable, do not use water.
<b>Hazard properties</b>	The battery may be over-heated by outside and interior short circuit, and burning batteries may emit toxic fumes.
<b>Hazardous Combustion Products</b>	Metallic oxide; Carbon oxide(CO); Carbon ioxide(CO2) etc
<b>Firemen Safeguard</b>	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

## Section 6 - Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures**

<b>Personal precautions</b>	Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
<b>Other information</b>	Refer to protective measures listed in Sections 7 and 8

**Methods and material for containment and cleaning up**

<b>Methods for containment</b>	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
<b>Methods for cleaning up</b>	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

**Precautions for safe handling**

**Advice on safe 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.
- The battery should be transported with 20%~70% charge state.

**Conditions for safe storage, including any incompatibilities**

- 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**

**Control parameters**

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
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
12V60Wh	12V	5Ah	60Wh

12V72Wh	12V	6Ah	72Wh
12V84Wh	12V	7Ah	84Wh
12V96Wh	12V	8Ah	96Wh

**Appearance Characters**

Solid. 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**

**Reactivity**

None.

**Chemical Stability**

Stable under normal condition

**Possibility of hazardous reactions**

- None under normal processing.
- 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.	RETC
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/m<sup>3</sup>/4h ( small rat, inhalation)
- LD50 : >27 g/kg (small rat, to eat)

Ingredients: LiPF<sub>6</sub>

- 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:**

Toxic to aquatic life with long lasting effects.

Chemical name	Toxicity to Algae	Toxicity to Fish	Daphnia Magna (Water Flea)
Copper	72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata)	96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 0.112 mg/L (Poecilia reticulata) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: < 0.3 mg/L (Pimephales promelas)	48h EC50: = 0.03 mg/L
Graphite	-	96h LC50: > 100 mg/L (Danio rerio)	-

**Persistence and Degradability:** No information available

**Bioaccumulative Potential:** No information available

**Mobility in Soil:** No information available

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

## Section 13 - Disposal Considerations

**Disposal Methods:**

Dispose of in accordance with local regulations, dispose of waste in according with environmental legislation.

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.

**California Waste Code: 141**

The product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	CAS No.	California Hazardous Waste
Lithium Iron Phosphate Carbon Coated (LiFePO4)	15365-14-7	Toxic
Copper (Cu)	7440-50-8	Toxic
Aluminum (Al)	7429-90-5	Ignitable powder

## 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.

**Sea Transport:**

Lithium Ion Battery ( $\leq 100\text{Wh}$ ) can be transported as non-dangerous goods according to IMDG SP188.

Lithium Ion Battery ( $> 100\text{Wh}$ ) should be transported as dangerous goods: UN3480 – Class 9; package complies with the PI903 of IMDG code (Amdt.39-18) 2018 edition, meet the packing group II performance standards.

**Air Transport:**

- Lithium Ion Cells ( $\leq 20\text{Wh}$ ) or Batteries ( $\leq 100\text{Wh}$ ) : UN3480 with Section II of PI965 of IATA DGR 61st Edition 2020 of transportation.;

Limit per package:  $\leq 2.7\text{Wh}=2.5\text{kg}$  or  $\leq 20\text{Wh}=8$  cells or  $\leq 100\text{Wh}=2$  batteries



- Lithium Ion Cells ( $\leq 20\text{Wh}$ ) or Batteries ( $\leq 100\text{Wh}$ ) :UN3480 with Section IB of PI965 of IATA DGR 61st Edition 2020 of transportation.;

Limit per package:  $\leq 10\text{kg}$



- Lithium Ion Cells ( $> 20\text{Wh}$ ) or Batteries ( $> 100\text{Wh}$ ) :UN3480 with Section IA of PI965 of IATA DGR 61st Edition 2020 of transportation.;

Limit per package:  $\leq 35\text{kg}$



Lithium ion cell/battery packed with equipment: UN3481 with PI966 of IATA DGR 61st Edition 2020 of transportation.;

Lithium ion cell/battery contained in equipment: UN3481 with PI967 of IATA DGR 61st Edition 2020 of transportation.;

**Land Transport:**

ADR/RID(cross-broder)

**Section 15 - Regulatory Information**

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

CAS No.	TSCA	IECSC	DSL/NDSL
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)

**Section 16 - Other Information**

Issue Department: Technical Department

Revision Date: 01/20/2020

Revision explanation: N/A

**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.