

Safety Data Sheet

Name of sample :

Lithium ion battery

Model:

36V 6Ah 216Wh

Client :

SHENZHEN RONGSHENGYUAN

TECHNOLOGY CO.,LTD.

Compiled by:

Test Engineer

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1.Chemical product and company identification

Commissioned by	SHENZHEN RONGSHENGYUAN TECHNOLOGY CO.,LTD.
Commissioner address	Floor 2-3,Building B,Jili Science And Technology Park,Baishi Village,Qiuchang Town,Huiyang District,Huizhou City,Guangdong Province
Manufacturer	SHENZHEN RONGSHENGYUAN TECHNOLOGY CO.,LTD.
Manufacturer address	Floor 2-3,Building B,Jili Science And Technology Park,Baishi Village,Qiuchang Town,Huiyang District,Huizhou City,Guangdong Province
Name of samples	Lithium ion battery
Type/Model	36V 6Ah 216Wh
Rated capacity	6Ah
Nominal voltage	36V
Rated energy	216Wh
Emergency telephone call	0752-3535247

2.Hazard(s) identification

(a) Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200),This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1

(b) GHS Label elements, including precautionary statements

Emergency Overview
<p>Signal word: Danger</p> <p>Hazard Statements: Causes skin irritation. Causes serious eye damage.</p> <div style="text-align: center;">  </div> <p>This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold. Intended use of the product should not result in exposure to the chemical substance. This is a battery. In case of rupture: the above hazards exist.</p> <p>Appearance:Blue Physical State:Solid Odor:Odorless</p>

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling;
Wear protective gloves/protective clothing/eye protection/face protection Do not breathe dust,fume,gas,mist,vapors,spray;
Do not eat, drink or smoke when using this product;

Precautionary Statements – Response

Specific treatment (see supplemental first aid instructions on this label) Get medical advice/attention if you feel unwell:

-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: Wash with plenty of soap and water;

If skin irritation occurs: Get medical advice/attention Take off contaminated clothing and wash before reuse;

Precautionary Statements - Storage

No information available.

Precautionary Statements – Disposal

Dispose of contents/container to an approved waste disposal plant

(c) Hazards not otherwise classified (HNOC)

No information available.

(d) Unknown Toxicity

10% of the mixture consists of ingredient(s) of unknown toxicity.

(e) Other information

No information available.

(f) Interactions with Other Chemicals

No information available.

3.Composition/information on ingredients

(a) Mixtures information

Chemical name	CAS No.	Concentration%
Lithium cobalt oxide	12190-79-3	40-45
Graphite	7782-42-5	20-23
Carbon black	1333-86-4	4-5
Methyl ethyl carbonate	623-53-0	2-3
Phosphate(1-),hexaf luoro-,lithium	21324-40-3	2-3
Copper	7440-50-8	6-8
Aluminium	7429-90-5	3-5
Nickel	7440-02-0	2-5
Poly(vinylidene flouride)	24937-79-9	2-5

4.First-aid measures

(a) Description of first aid measures

General Advice	First aid is upon rupture of sealed battery.
Eye contact	Show this safety data sheet to the doctor in attendance. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. Do not rub affected area.
Skin contact	Remove contaminated clothes and rinse the skin with plenty of water. Get medical advice/attention if you feel unwell.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, (trained personnel should) give oxygen. Get medical advice/attention if you feel unwell.
Ingestion	Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get medical aid.
Self-protection of the first aider	Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get medical aid. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

(b) Most important symptoms/effects, acute and delayed

Contact with internal components may cause allergic skin sensitization (rash) and irritate eyes, skin, nose, throat, respiratory system. Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).

(c) Immediate medical attention and special treatment

No information available.

5.Fire-fighting measures

Suitable extinguishing media	Use foam, dry powder or dry sand, CO ₂ as appropriate.
Unsuitable extinguishing media	No information available.

(a) Special hazards arising from the chemical

Under fire conditions, batteries may burst and release hazardous decomposition products when exposed to a fire situation. This could result in the release of flammable or corrosive materials. Hazardous combustion products: CO, CO₂, Metal oxides, Irritating fumes;

(b) Special protective equipment and precautions for fire-fighters

Firefighters must wear fire resistant protective equipment and appropriate breathing apparatus. The staff must equip with filtermask (full mask) or isolated breathing apparatus.

The staff must wear the clothes which can defense the fire and the toxic gas. Put out the fire in the upwind direction. Remove the container to the open space as soon as possible.

Spray water on the containers in the fireplace to keep them cool until finish extinguishment.

6. Accidental release measures

(a) Personal precautions, protective equipment and emergency procedures

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area, dispose the case after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.

(b) Environmental Precautions

Prevent material from contaminating soil and from entering sewers or waterways.

(c) Methods and materials for containment and cleaning up

If the battery casing is dismantled, small amounts of electrolyte may leak. 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.

7. Handling and storage

(a) Precautions for safe handling

Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types;

Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access;

Unpacked batteries shall not lie about in bulk;

In case of battery change always replace all batteries by new ones of identical type and brand;

Do not swallow batteries;

Do not throw batteries into water;

Do not throw batteries into fire;

Avoid deep discharge;

Do not short-circuit batteries Use recommended charging time and current;

(b) Conditions for safe storage, including any incompatibilities

If the battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the battery periodically;

And recommended at $-5^{\circ}\text{C}\sim 45^{\circ}\text{C}$ for 1 month storage, at $-5^{\circ}\text{C}\sim 35^{\circ}\text{C}$ for 3 months storage;

Do not storage the battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects;

Keep out of reach of children;

8. Exposure controls/personal protection

(a) Control parameters Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Lithium cobalt oxide 12190-79-3	TWA: 0.02 mg/m3	N/A	N/A
Graphite 7782-42-5	TWA: 1/mg/m3 respirable fraction	TWA: 15 mg/m3 total dust TWA: 5 mg/m3 respirable fraction (vacated) TWA: 15 mg/m3 total dust (vacated) TWA: 5 mg/m3 respirable	TWA: 10 mg/m3 total dust TWA: 5 mg/m3 respirable dust
Copper 7440-50-8	TWA: 0.2 mg/m3 fume TWA: 1 mg/m3 Cu dust and mist	TWA: 0.1 mg/m3 fume TWA: 1 mg/m3 dust and mist (vacated) TWA: 0.1 mg/m3 Cu dust, fume, mist	IDLH: 100 mg/m3 dust, fume and mist TWA: 1 mg/m3 dust and mist TWA: 0.1 mg/m3 fume
Carbom nanotubes 1333-86-4	TWA: 2.5 mg/m3 F	TWA: 2.5 mg/m3 F TWA: 2.5 mg/m3 dust	N/A

ACGIH TLV: American Conference of Governmental Industrial Hygienists -Threshold Limit Value;

OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits Immediately Dangerous to Life or Health;

Other Exposure Guidelines: Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962(11th Cir., 1992) See section 15 for national exposure control parameters;

(b) Appropriate engineering controls

Engineering Measures	1. Showers
	2. Eyewash stations
	3. Ventilation systems

(c) Individual protection measures, such as personal protective equipment

Eye/Face Protection	Not necessary under normal conditions, wear safety glasses if handling an open or leaking battery.
Skin and body Protection	Not necessary under normal conditions, Wear protective gloves and protective clothing such as long sleeved clothing, impervious gloves, chemical resistant apron, and antistatic boots if handling an open or leaking battery.
Respiratory Protection	Not necessary under normal conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice, Avoid contact.

9.Physical and chemical properties

(a) Appearance	Blue
(b) Odor	Odorless
(c) Odor threshold	Not available.
(d) pH	Not available.
(e) Melting point/freezing point	Not available.
(f) Initial boiling point and boiling range	Not available.
(g) Flash point	Not applicable.
(h) Evaporation rate	Not applicable.
(i) Flammability	Non flammable.
(j) Upper/lower flammability or explosive limits	Not available.
(k) Vapor pressure	Not applicable.
(l) Vapor density	Not available.
(m) Relative density	Not available.
(n) Solubility(ies)	Insoluble in water.
(o) Partition coefficient: n-octanol/water	Not available.
(p) Auto-ignition temperature	130°C
(q) Decomposition temperature	Not available.
(r) Viscosity	Not available.

10.Stability and reactivity

(a) Reactivity	Stable under recommended storage and handling conditions.
(b) Chemical stability	Stable under normal conditions.
(c) Possibility of hazardous reactions	When heated above 150°C the risk of rupture occurs. Due to special safety construction, rupture implies controlled release of pressure without ignition.
(d) Conditions to avoid	Do not subject the battery to mechanical shock. Keep away from open flames, high temperature.
(e) Incompatible materials	Strong oxidizer, strong acid.
(f) Hazardous decomposition products	Under fire conditions, the electrode materials can form carcinogenic nickel and cobalt oxides.

11.Toxicological information

(a) Information on the likely routes of exposure

Inhalation	Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.
Ingestion	Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.
Skin contact	Contact with battery electrolyte may cause burns and skin irritation.
Eye contact	Contact with battery electrolyte may cause burns. Eye damage is possible.

Under normal conditions (during charge and discharge) release of ingredients does not occur. If accidental release occurs see information in section 4.

Swallowing of a battery can be harmful.

Call the local Poison Control Centre for advice and follow-up.

(b) Information on toxicological characteristics

Acute toxicity	No data available.
Skin corrosion/irritation	The liquid in the battery irritates.
Serious eye damage/irritation	The liquid in the battery irritates.
Respiratory sensitization	The liquid in the battery may cause sensitization to some person.
Skin sensitization	The liquid in the battery may cause sensitization to some person.
Carcinogenicity	Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).
Germ Cell Mutagenicity	No data available.
Reproductive Toxicity	No data available.
STOT-Single Exposure	No data available.
STOT-Repeated Exposure	No data available.
Aspiration Hazard	No data available.

(c) Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization	No data available.
Mutagenic Effects	No data available.
Carcinogenicity	No data available.
Reproductive Toxicity	No data available.
Chronic Toxicity	No data available.
Target Organ Effects	No data available.
Aspiration Hazard	No data available.

12. Ecological information

(a) Ecotoxicity

Water hazard class 1(Self-assessment): slightly hazardous for water.

(b) Persistence and Degradability

No information available.

(c) Bioaccumulative potential

No information available.

(d) Mobility in soil

No information available.

(e) Other adverse effects

No information available.

13. Disposal considerations

Safe handling and methods of disposal

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Product disposal recommendation:

Observe local, state and federal laws and regulations.

Packaging disposal recommendation:

Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't disassembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations. The potential effects on the environment and human health of the substances used in batteries and accumulators, the desirability of not disposing of waste batteries and accumulators as unsorted municipal waste and of participating in their separate collection so as to facilitate treatment and recycling.

14. Transport information

The goods shall be complied with the requirements of Section IA\IB\II of Packing Instructions 965 and Section III of Packing Instructions 966\967 of 61st DGR Manual of IATA(2020 edition)or special provision 188 of IMDG CODE(Amdt. 39-18)2018 Edition.

The batteries should be securely packed and protected against short-circuits. Examine whether the package of the containers are integrate and tighten closed before transport.

Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles.

Don't put the goods together with oxidizer and chief food chemicals. The transport vehicle and ship must be cleaned and sterilized otherwise it is not allowed to assemble articles. During transport, the vehicle should prevent exposure, rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, the assemble place should keep away from bedroom and kitchen, and isolated from the engine room, power and fire source.

Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don't stop over in the residential area and congested area. Forbid to use wooden, cement for bulk transport.

(a) UN number	UN3480 or UN348 or UN3171
(b) UN Proper shipping name	Lithium Ion Batteries (or); Lithium Ion Batteries Contained in Equipment (or); Lithium Ion Batteries Packed with Equipment Battery-powered Vehicle.
(c) Transport hazard class(es)	9
(d) Packing group (if applicable)	No information available.
(e) Marine pollutant (Yes/No)	No
(f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)	No information available.
(g) Special precautions	No information available.

15.Regulatory information

OSHA hazard communication standard (29 CFR 1910.1200)

Hazardous Non-hazardous

16.Other information

(a) Preparation and revision information

Date of previous revision	Not applicable
Revision summary	The first New SDS
Date of issue	July 22, 2021

(b) Abbreviations and acronyms

TSCA	Toxic Substances Control Act, The American chemical inventory.
DSL	Domestic Substances List.
EINECS	European Inventory of Existing Commercial chemical Substances.
ENCS	Japanese Existing and New Chemical Substances.
ECL	Existing Chemicals List, the Korean chemical inventory.
IECSC	Inventory of existing chemical substances in China.

(c) Disclaimer

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard.

The information in this SDS is provided all the relevant data fully and truly. However, the information is provided without any warranty on their absolute extensiveness and accuracy. This SDS was prepared to provide safety preventive measures for the users who have got professional training. The personal user who obtained this SDS should make independent judgment for the applicability of this SDS under special conditions. In these special cases, we do not assume responsibility for the damage.

STATEMENTS

1. The test report is invalid without the official stamp of Tiansu.
2. Nobody is allowed to photocopy or partly photocopy this test report without written permission of Tiansu.
3. The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.
4. The test report is invalid if altered.
5. Objections to the test report must be submitted to Tiansu within 15 days.
6. The test report is valid for the tested samples only.

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