KEYLAB
众凯检测

REPORT No. : KEYLAB1607023K02

Safety Data Sheet

APPLICANT	:	SHENZHEN RUIDE ELECTRONIC INDUSTRIAL CO.,LTD
ADDRESS	:	10A-1001, F1 Block, TCL International E City, Zhong Shan Yuan Road, NanShan District, ShenZhen, China
BRAND NAME	:	ZTE
SAMPLE NAME	:	Li-ion Battery
MODEL NAME	:	Li3831T43P4h826247
ISSUE DATE	:	2016-07-25

Product Testing Technical Service KEYLAB Global Certification

Shenzhen Keylab Technology Co., Ltd.

Shenzhen Keylab Technology Co., Ltd.
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1. Chemical Product and Company Identification

Product Name	Li-ion Battery
Model No.	Li3831T43P4h826247
Nominal Voltage	3.8V
Nominal Capacity	3080mAh
Watt-hour Rating	11.7Wh
Manufacturer	SHENZHEN RUIDE ELECTRONIC INDUSTRIAL CO.,LTD
Manufacturer Address	10A-1001, F1 Block, TCL International E City, Zhong Shan Yuan Road, NanShan District, ShenZhen, China
Emergency Telephone Number	+86 752 6509226

2. Hazards Identification

Preparation hazards and classification	When the battery is in extreme pressure deformation, high-temperature environment, overload, short-circuit condition, or disassemble the battery, an explosion of fire and chemical burn hazards may occur.
Carcinogenicity	NTP: None IARC Monograph: None OSHA Regulated: None
Primary Route(s) of Exposure	These chemicals are contained in a sealed stainless steel enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by inhalation, ingestion, Eye contact and Skin contact.
Potential Health Effects	**ACUTE (short term):** see Section 8 for exposure controls in the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns. **Inhalation:** A battery volatilizes no gas unless it was damaged. Damaged battery will volatilize little gas may stimulate the respiratory tract or cause an anaphylaxis in serious condition. Ingestion: Swallowing battery will be Damaged to the respiratory tract and Cause chemical burns to the stomach; in serious conditions it will cause Permanent damage. **Skin:** In normal condition, Contact between the battery and skin will not cause any harms. Contact with a damaged battery may cause skin allergies or chemical burns.

	Eye: In normal condition, Contact between the battery and eyes will not cause any harms. However, the gas Volatilize from a damaged battery may be harmful to eyes.

3. Composition/Information on Ingredients

Hazardous Ingredients	Approximate% of total weight	CAS Number	EC No.
Lithium Cobalt Oxide	34	12190-79-3	235-362-0
PVDF	1.5	24937-79-9	200-867-7
Carbon	21	7782-42-5	231-955-3
Lithium hexafluorophosphate	6	21324-40-3	244-334-7
PE	2	9002-88-4	200-815-3
PP	2	9003-07-0	/
Aluminum	19	7429-90-5	231-072-3
Copper	13	7440-50-8	231-159-6
Nickel	1.5	7440-02-0	231-853-9

4. First Aid Measures

The following first aid measures are required only in case of exposure to interior battery components after damage of the external battery casing.	
Skin contact	If skin contact with contents of open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.
Eye contact	If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.
Inhalation	If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice
Ingestion	If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. Call a physician.

5. Fire Fighting Measures

Flammable Properties	In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.
Suitable extinguishing media	Cold water and dry powder in large amount are applicable. Use metal fire extinction powder or dry sand if only few cells are involved.
Specific Hazards arising from the chemical	May form hydrofluoric acid if electrolyte comes into contact with water. In case of fire, the formation of the following flue gases cannot be excluded: Hydrogen fluoride (HF), Carbon monoxide and carbon dioxide.
Protective Equipment and precautions for firefighters	As for any fire, evacuate the area and fight the fire from a sate distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance.

6. Accidental Release Measures

Personal Precautions, protective equipment, and emergency procedures	Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8
Environmental Precautions	Prevent material from contaminating soil and from entering sewers or waterways.
Methods and materials for containment	Stop the leak if safe to do so. Contain the spilled liquid with dry sand of earth. Clean up spills immediately.
Methods and materials for cleaning up	Absorb spilled material with an inert absorbent (dry and earth), Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

7. Handling and Storage

Handing	Do not dismantle open or shred secondary Lithium Ion Battery; Don't handing Lithium Ion Battery with metalwork. Do not open, dissemble, crush or burn battery. Do not use any chargers other than those recommended by the manufacturer. Ensure good ventilation/exhaustion at the workplace. Prevent formation of dust. Information about protection against explosions and fires: Keep ignition sources away-Do not smoke.
Storage	If the Lithium Ion Battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the Lithium Ion Battery periodically. 3 months: -10℃~+45℃, 45 to 85% RH And recommended at -10℃~+35℃ for long period storage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. Do not storage Lithium Ion 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. Do not expose Lithium Ion Battery to heat of fore. Avoid storage in direct sunlight. Do not store together with oxidizing and acidic materials.

8. Exposure Controls/Personal Protection

Hazard Characterization

Ingredient	Risk Codes	Safety Description	Hazard
Lithium Cobalt Oxide	R22; R43; R50/53	S24; S37; S60; S61	Xn (Harmful) N (Dangerous for the environment)
PVDF	NA	S22; S24/25	NA
Carbon	R36/37/38, R36/37 R20, R10	S22; S24/25	F(Highly Flammable) Xn (Harmful) Xi (Irritant)
PP	R5 R6 R19	S22; S24/25	F(Highly Flammable)
PE	R5 R6 R19	S22; S24/25	F(Highly Flammable)
Copper	R11 R36 R37 R38	S5,S26,S16,S61,S36/37	F(Highly Flammable) N (Dangerous for the environment)

			Xn (Harmful) Xi (Irritant)
Aluminum	R17, R15, R36/38, R10, R67, R65, R62, R51/53, R48/20, R38, R1	S7/8,S43,S26,S62,S61, S36/37,S33,S29,S16,S9	F(Highly Flammable) Xn (Harmful) Xi (Irritant)
Nickel	R43, R49, R53	S45,S53,S61	T(Toxic)

Safeguard procedures

Engineering Controls	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.
Personal Protective Equipment	Respiratory Protection: Not necessary under normal conditions. Skin and body Protection: Not necessary under normal conditions, Wear neoprene or nitride rubber gloves if handing an open or leaking battery. Hand protection: Wear neoprene or natural rubber material gloves if handing an open of leaking battery. Eye Protection: Not necessary under normal conditions, Wear safety glasses if handing an open or leaking battery.
Other Protective Equipment	Have a safety shower and eye wash fountain readily available in the immediate work area.
Hygiene Measures	Do not eat, drink, or smoke in work area. Maintain good housekeeping.

9. Physical and Chemical Properties

Physical State	Form: Rectangle shape
	Color: black
	Odour: Monotony
Change in condition	Not available
PH, with indication of the concentration	Not available
Melting point/freezing point	Not available

Boiling Point, initial boiling point and boiling range	Not available
Flash Point	Not available
Upper/Lower flammability or explosive limits	Not available
Density/relative density	Not available
Solubility in Water	Insoluble
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Flammability (soil, gas)	Not available
Viscosity	Not available

10.Stability and Reactivity

Stability	The product is stable under normal conditions.
Conditions to avoid	Do not subject Lithium Ion Battery to mechanical shock. Vibration encountered during transportation does not cause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.
Incompatible materials	Not Available
Hazardous decomposition products	This material may release toxic fumes if burned or exposed to fire
Possibility of Hazardous Reaction	Not Available

11.Toxicological Information

Irritation	Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.
Sensitization	Not Available
Neurological Effects	Not Available
Teratogenicity	Not Available
Reproductive Toxicity	Not Available
Mutagenicity (Genetic Effects)	Not Available
Toxicologically Synergistic Materials	Not Available

12.Ecological Information

General note	Water hazard class 1 (Self- assessment): slightly hazardous for water.
Anticipated behavior of a chemical product in environment/possible environmental impace/ecotoxicity	Not Available
Mobility in soil	Not Available
Persistence and Degradability	Not Available
Bioaccumulation potential	Not Available
Other Adverse Effects	Not Available

13.Disposal Considerations

Disposal of the battery should be performed by permitted, professional disposal firms knowledgeable in Federal, State or Local requirements of hazardous waste treatment and hazardous waste transportation.

California regulated debris
RCRA Waste Code: Non-regulated
Dispose of according to all federal, state, and local regulations.
Contaminated Packaging Dispose of in accordance with local regulations.
California Hazardous Waste Codes 141
Washington State Waste Codes WT02
Connecticut Waste Codes CR05
Product Waste Information

US EPA Waste Number	D004 D006 D008	US EPA Waste Hazard	Toxic
Alabama Waste Code	Not required	Alabama Waste Hazards	Toxic
Alaska Waste Code	Not required	Alaska Waste Hazards	Toxic
Arkansas Waste Code	Not required	Arkansas Waste Hazard	Toxic
Arizona Waste Codes	Not required	Arizona Waste Hazards	Toxic
California Hazardous Waste Codes	141	California Waste Hazards	Toxic Toxic Waste oils
Colorado Waste Code	Not required	Colorado Waste Hazards	Toxic
Connecticut Waste Codes	CR05	Connecticut Waste Hazards	Toxic Waste Oil
Delaware Waste Codes	Not required	Delaware Waste Hazards	Toxic
Florida Waste Codes	Not required	Florida Waste Hazards	Toxic
Georgia Waste Codes	Not required	Georgia Waste Hazards	Toxic
Hawaii Waste Codes	Not required	Hawaii Waste Hazards	Toxic
Idaho Waste Codes	Not required	Idaho Waste Hazards	Toxic
Iowa Waste Codes	Not required	Iowa Waste Hazards	Toxic
Illinois Waste Codes	Not required	Illinois Waste Hazards	Toxic
Indiana Waste Codes	Not required	Indiana Waste Hazards	Toxic
Kansas Waste Codes	Not required	Kansas Waste Hazards	Toxic
Kentucky Waste Codes	Not required	Kentucky Waste Hazards	Toxic
Louisiana Waste Codes	Not required	Louisiana Waste Hazards	Toxic
Massachusetts Waste Codes	Not required	Massachusetts Waste Hazards	Toxic
Maryland Waste Codes	Not required	Maryland Waste Hazards	Toxic
Maine Waste Codes	Not required	Maine Waste Hazards	Toxic
Michigan Waste Codes	Not required	Michigan Waste Hazards	Toxic Oil
Minnesota Waste Codes	Not required	Minnesota Waste Hazards	Toxic Oil
Missouri Waste Codes	Not required	Missouri Waste Hazards	Toxic Oil

Mississippi Waste Codes	Not required	Mississippi Waste Hazards	Toxic
Montana Waste Codes	Not required	Montana Waste Hazards	Toxic
North Carolina Waste Codes	Not required	North Carolina Waste Hazards	Toxic
North Dakota Waste Codes	Not required	North Dakota Waste Hazards	Toxic
Nebraska Waste Codes	Not required	Nebraska Waste Hazards	Toxic
New Hampshire Waste Codes	Not required	New Hampshire Waste Hazards	Toxic Oil
New Hampshire Waste Codes	Not required	New Hampshire Waste Hazards	Toxic Oil
New Jersey Waste Codes	Not required	New Jersey Waste Hazards	Toxic
New Mexico Waste Codes	Not required	New Mexico Waste Hazards	Toxic
Nevada Waste Codes	Not required	Nevada Waste Hazards	Toxic
New York Waste Codes	Not required	New York Waste Hazards	Toxic
Ohio Waste Codes	Not required	Ohio Waste Hazards	Toxic
Oklahoma Waste Codes	Not required	Oklahoma Waste Hazards	Toxic
Oregon Waste Codes-WM	Not required		
Oregon Waste Codes	Not required	Oregon Waste Hazards	Toxic
Pennsylvania Waste Codes	Not required	Pennsylvania Waste Hazards	Toxic
Rhode Island Waste Codes-Original	Not required	Rhode Island Waste Hazards- Original	Extremely Hazardous Toxic
Rhode Island Waste Codes- WM	Not required		
Rhode Island Waste Codes	Not required	Rhode Island Waste Hazards	Extremely Hazardous Toxic
South Carolina Waste Codes	Not required	South Carolina Waste Hazards	Toxic
South Dakota Waste Codes	Not required	South Dakota Waste Hazards	Toxic
Tennessee Waste	Not required	Tennessee Waste Hazards	Toxic

Codes			
Texas Waste Codes	Not required	Texas Waste Hazards	Toxic
Utah Waste Codes	Not required	Utah Waste Hazards	Toxic
Virginia Waste Codes	Not required	Virginia Waste Hazards	Toxic
Vermont Waste Codes-Original	Not required	Vermont Waste Hazards-Original	Do not use with federal code. Contains Vermont Hazardous Waste Toxic
Vermont Waste Codes	Not required	Vermont Waste Hazards	Toxic
Washington State Waste Codes	WT02	Washington Waste Hazards	Toxic
Wisconsin Waste Codes	Not required	Wisconsin Waste Hazards	Toxic
West Virginia Waste Codes	Not required	West Virginia Waste Hazards	Toxic
Wyoming Waste Codes	Not required	Wyoming Waste Hazards	Toxic

14.Transport Information

With regard to transport, the following regulations are cited and considered

- 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.
- The International Civil Aviation Organization (ICAO) Technical Instructions, Packing Instruction 965-967, Section Ⅰ B or Ⅱ (2015-2016 Edition)
- The International Air Transport Association (IATA) Dangerous Goods Regulations, Packing Instruction 965-967, Section Ⅰ B or Ⅱ (57th Edition, 2016). For cells, the Watt-hour rating should not be more than 20Wh; For batteries, the Watt-hour rating should not be more than 100Wh. Watthour rating must be marked on the outside of the battery case.
- The International Maritime Dangerous Goods (IMDG) Code (2012 Edition), [Special provision 188, 230]
-The UN classification number: Class 9 3480 / 3481
- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries, Rev.5, Amend.1 and Amend.2.

15.Regulatory Information

EU regulatory information

Marking consideration

According to Directive 2012/19/EU, the batteries have to be marked with the crossed wheel bin symbol.

According to Dangerous Goods Regulations, the battery packs have to be marked with the Watt-hour rating.

U.S. Regulations

National Inventory TSCA

All of the components are listed on the TSCA inventory.

SARA

To the best of our knowledge this product contains no toxic chemicals subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act(SARA/EPCRA) and the requirements of 40 CFR Part 372.

16. Other Information

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation.

This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

DISCLAIMER

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. We make no warranty of merchantability or any other warranty express or implied, with respect to such information, and we assume no liablity resulting from its use. Users should make their own investigation to determine the suitability of the information for their particular purposes. In no way shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental consequential or exemplary damages, howsoever arising from using the above information.

Checked by: Ye Jia Approved by: Hao Yanjun

******* End of Material Safety Data Sheet *******

Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN
Product name: Li-Ion Battery

Revision date: 26-July-2016
Printing date: 26-July-2016

1. Identification

(a) Product identifier

Product name: Li-Ion Battery

(b) Other means of identification

Product description: Model: Li3831T43P4h826247
Nominal Voltage: 3.8V
Ampere-hour: 3.08Ah
Typical Capacity: 3080mAh
Weight: 60.0g
Dimension: 81.7mm×62.0mm×4.7mm (L×W×T)

(c) Recommended use of the chemical and restrictions on use

Recommended use: Li-ion Battery.
Restriction on use: No information available.

(d) Details of the supplier of the product

Company name(China) SCUD (FUJIAN) ELECTRONICS CO LTD
Address: SCUD Industrial Park, Economic and Technology Development Zone, Fuzhou, Fujian, China
E-mail: xiehong@scud.cn
Telephone: +86-591-87307718

(e) Emergency phone number

+86-591-87307718

2. Hazard(s) identification

(a) Classification of the chemical

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.

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

(b) GHS Label elements, including precautionary statements

Emergency Overview

Signal word **Danger**

Hazard Statements
Harmful if swallowed
Harmful in contact with skin
Causes severe skin burns and eye damage
Causes serious eye damage

Causes damage to organs through prolonged or repeated exposure

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.

Precautionary Statements – Prevention

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Use personal protective equipment as required

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

Contaminated work clothing should not be allowed out of the workplace

Wear protective gloves

Precautionary Statements – Response

Specific measures (see .? on this label)

Immediately call a POISON CENTER or doctor/physician

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/physician

Skin

Call a POISON CENTER or doctor/physician if you feel unwell

Wash contaminated clothing before reuse

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower

If skin irritation or rash occurs: Get medical advice/attention

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Immediately call a POISON CENTER or doctor/physician

Ingestion

IF SWALLOWED: Call a POISON CENTER or doctor/physician.

if you feel unwell, Rinse mouth. Don't induce vomiting

Precautionary Statements – Storage: Store locked up

Precautionary Statements – Disposal: Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC): Not applicable

(c) Other information

Very toxic to aquatic life with long lasting effects;

Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

(d) 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	37.94
Graphite powder	7782-42-5	15.45
Carbon black	1333-86-4	4.32
Styrene-butadiene rubber(SBR)	61789-96-6	3.26
Polypropylene	9003-07-0	3.74
Polyethylene	9002-88-4	2.40
Lithium hexafluorophosphate	21324-40-3	8.37
Ethylene carbonate(EC)	96-49-1	2.83
Diethyl carbonate(DEC)	105-58-8	2.56
Copper	7440-50-8	8.67
Aluminium	7429-90-5	10.46

4. First-aid measures

(a) Description of first aid measures

General Advice First aid is upon rupture of sealed battery.

Eye contact: 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. Seek immediate medical attention/advice.

Skin contact: Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required. May cause an allergic skin reaction.

Inhalation: 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 medical attention immediately if symptoms occur.

Ingestion: Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Self-protection of the first aider: 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. Use personal protective equipment as required. Wear personal protective clothing (see section 8).

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

Most important symptoms and Itching, Coughing and/ or wheezing. Burning sensation.

effects:

(c) Indication of any immediate medical attention and special treatment needed

Notes to Physician — 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.

5. Fire-fighting measures

(a) Extinguishing media

Suitable extinguishing media: Use foam, dry powder or dry sand, CO_2 as appropriate.
Unsuitable extinguishing media: No information available.

(b) 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, CO_2, Metal oxides, Irritating fumes

(c) 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

Personal Precautions — In case of rupture. 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.

Other Information — Refer to protective measures listed in Sections 7 and 8.

(b) Environmental Precautions

Environmental Precautions — Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

(c) Methods and materials for containment and cleaning up

Methods for Containment — Prevent further leakage or spillage if safe to do so.
Methods for cleaning up — Pick up and transfer to properly labeled containers.

7. Handling and storage

(a) Precautions for safe handling

Handling	In case of rupture. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection equipment.

(b) Conditions for safe storage, including any incompatibilities

Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Keep out of the reach of children. Store away from other materials.
Incompatible Products	Acids. Bases. Oxidizing agent.

8. Exposure controls/personal protection

(a) Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	TWA: 0.02 mg/m³		
Graphite powder 7782-42-5	TWA: 2 mg/m3 respirable fraction all forms except graphite fibers	TWA: 15 mg/m3 total dust synthetic TWA: 5 mg/m3 respirable fraction synthetic (vacated) TWA: 2.5 mg/m3 respirable dust natural (vacated) TWA: 10 mg/m3 total dust synthetic (vacated) TWA: 5 mg/m3 respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m3 TWA: 2.5 mg/m3 respirable dust
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m3 F	TWA: 2.5 mg/m3 F TWA: 2.5 mg/m3 dust (vacated) TWA: 2.5 mg/m3	
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
Aluminum 7429-90-5	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 fraction (vacated) TWA: 5 mg/m3 Al Aluminum	TWA: 10 mg/m3 total dust TWA: 5 mg/m3 respirable dust
Carbon black 1333-86-4	TWA: 3 mg/m3 inhalable fraction	TWA: 3.5 mg/m3 (vacated) TWA: 3.5 mg/m3	IDLH: 1750 mg/m3 TWA: 3.5 mg/m3 TWA: 0.1 mg/m3 Carbon black in presence of Polycyclic aromatic hydrocarbons PAH

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	Showers Eyewash stations Ventilation systems

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

Eye/Face Protection	None required for consumer use. If there is a risk of contact:. Tight sealing safety goggles. Face protection shield.
Skin and Body Protection	None required for consumer use. If there is a risk of contact:. Wear protective gloves and protective clothing.
Respiratory Protection	No protective equipment is needed under normal use 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. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. For environmental protection, remove and wash all contaminated protective equipment before re-use.

9. Physical and chemical properties

(a) Appearance	solid
(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	Not available.
(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 recommended storage conditions.

(c) Possibility of hazardous reactions

None under normal processing.

(d) Conditions to avoid

Exposure to air or moisture over prolonged periods.

(e) Incompatible materials

Strong oxidizer, strong acid.

(f) Hazardous decomposition products

Carbon oxides.

11. Toxicological information

(a) Information on the likely routes of exposure

Product Information	Product does not present an acute toxicity hazard based on known or supplied information.
	In case of rupture:
Inhalation:	Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract.
Ingestion:	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May be harmful if swallowed.
Skin contact:	Specific test data for the substance or mixture is not available. Corrosive.

(based on components). Causes burns. May be absorbed through the skin in harmful amounts. Harmful in contact with skin.

Eye contact: Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Graphite powder 7782-42-5	> 10000 mg/kg (Rat)		
Aluminum 7429-90-5	> 15900 mg/kg bw(rat)		> 0.888 mg/L/4 h(rat)
Copper 7440-50-8	> 2500 mg/kg bw(rat)	> 2000 mg/kg bw(rat)	=1.03 mg/L/4 h(rat)

(b) Information on toxicological characteristics

Symptoms Erythema (skin redness). Burning. May cause blindness. Coughing and/ or wheezing. Itching. Rashes. Hives.

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

Sensitization: No information available.

Mutagenic Effects: No information available.

Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	A3	Group 2B		X
Carbon black 1333-86-4	A3			

ACGIH (American Conference of Governmental Industrial Hygienists)

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Group 2B - Possibly Carcinogenic to Humans

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

Reproductive Toxicity: No information available

STOT - single exposure: No information available

STOT - repeated exposure: Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).

Chronic Toxicity: Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal

	disturbances may also be seen. Contains a known or suspected carcinogen. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse liver effects.
Target Organ Effects	Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Blood. Central Nervous System (CNS). Central Vascular System (CVS). Kidney. Liver. Lungs.
Aspiration Hazard	No information available.

12. Ecological information

(a) Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Copper 7440-50-8	96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata) 72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata)	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: = 0.112 mg/L (Poecilia reticulata) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas)		48h EC50: = 0.03 mg/L

(b) Persistence and Degradability

No information available.

(c) Bioaccumulative potential

No information available.

(d) Other adverse effects

No information available.

13. Disposal considerations

(a) Waste treatment methods

Disposal methods	This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.
Contaminated Packaging	Dispose of contents/containers in accordance with local regulations

California Hazardous Waste Codes	141

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

Chemical Name	California Hazardous Waste
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	Toxic
Copper 7440-50-8	Toxic
Aluminum 7429-90-5	Ignitable powder

14. Transport information

Note:	The transportation of primary lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. The batteries must meet the following criteria for shipment: 1. Air shipments must meet the requirements listed in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations. 2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185. 3. The transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Passenger Aircraft; Final Rule) Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision A45 of IATA-DGR" or "special provision 188 of IMO-IMDG Code"
UN number	3480&3481
DOT	NOT REGULATED
Proper Shipping Name	NON REGULATED
Hazard Class	N/A
TDG	Not regulated
MEX	Not regulated
ICAO	Not regulated
IATA	Not regulated
Proper Shipping Name	NON REGULATED
Hazard Class	N/A
IMDG/IMO	Not regulated
Hazard Class	N/A
EmS-No.	F-A, S-I
RID	Not regulated
ADR	Not regulated
ADN	Not regulated

15. Regulatory information

(a) Safety, health and environmental regulations specific for the product in question

CAS No.	USA TSCA	EU EINECS	Japan ENCS	Korea ECL	China IECSC	Canada DSL
12190-79-3	Listed	Listed	Listed	Listed	Listed	Listed
7782-42-5	Listed	Listed	Not listed	Listed	Listed	Listed
1333-86-4	Not listed	Not listed	Listed	Listed	Listed	Not listed
61789-96-6	Listed	Listed	Listed	Listed	Listed	Not listed
9003-07-0	Not listed	Not listed	Not listed	Not listed	Listed	Not listed
9002-88-4	Listed	Listed	Listed	Listed	Listed	Listed
21324-40-3	Listed	Listed	Listed	Listed	Listed	Listed
96-49-1	Not listed	Listed	Listed	Listed	Listed	Not listed
105-58-8	Listed	Listed	Not listed	Listed	Listed	Not listed
7440-50-8	Listed	Not listed	Not listed	Listed	Not listed	Not listed
7429-90-5	Listed	Listed	Not listed	Listed	Not listed	Not listed

16. Other information, including date of preparation or last revision

(a) Preparation and revision information

Date of previous revision: Not applicable. Date of this revision: 26-July-2016

Revision summary: The first New SDS

(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.

---------- End of the SDS ----------