



Safety Data Sheet

1. Product and Company Identification

Name of goods	Lithium-ion Battery
Type / Mode	J167 (7.2V / 31.68Wh / 4400mAh)
Manufacturer	HYB BATTERY CO., LTD.
Manufacturer address	38, Shakeng 2 nd Road, Biling, Pingshan New District, Shenzhen, P.R. China
Inspection according to	EEC Directive 93/112/EC UN "Recommendations on the TRANSPORT OF DANGEROUS GOODS"
Emergency telephone call	0755-84686666

2. Composition Information

Chemical Composition	Chemical Formula	CAS No.	Weight (%)
Lithium Cobalt Manganese Nickel Oxide	Li (NiCoMn) O ₂	12190-79-3	37.11%
Carbon Black	C	1333-86-4	1.35%
PVDF	(CH ₂ -CF ₂) _n	24937-79-9	0.66%
Graphite powder	C	7782-42-5	19.35%
CMC	[C ₆ H ₇ O ₂ (OH) ₂ CH ₂ COONa] _n	9004-32-4	0.37%
SBR	(C ₈ H ₈ C ₄ H ₆) _x	9003-55-8	0.46%
Electrolyte	LiPF ₆	21324-40-3	13.51%
Copper Foil	Cu	7440-50-8	8.77%
Aluminum Foil	Al	7429-90-5	3.18%
Aluminum strip	Al	7429-90-5	0.10%
Nickel strip	Ni	7440-02-0	0.40%
Steel case	Fe	7439-89-6	6.68%
Steel cap	Fe	7439-89-6	5.96%
Separator	-[CH(CH ₃)CH ₂] _n -	9002-88-4	2.10%



3. Hazards Identification

Explosive risk	This article does not belong to the explosion dangerous goods
Flammable risk	This article does not belong to the flammable material
Oxidation risk	This article does not belong to the oxidation of dangerous goods
Toxic risk	This article does not belong to the toxic dangerous goods
Radioactive risk	This article does not belong to the radiation of dangerous goods
Mordant risk	This article does not belong to the corrosion of dangerous goods
Other risk	This article is Lithium-ion Battery, Watt hour rate 31.68Wh, which belong to the Lithium ion batteries (including lithium ion polymer batteries)

4. First aid measures

Eye

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin

Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

Inhalation

Remove from exposure and move to fresh air immediately. Use oxygen if available.

Ingestion

Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

5. Fire-Fighting measure

Flash Point: N/A

Auto-Ignition Temperature: N/A

Extinguishing Media: Water, CO2

Special Fire-Fighting Procedures

Self-contained breathing apparatus.

Unusual Fire and Explosion Hazards

Cell may vent when subjected to excessive heat-exposing battery contents.



Hazardous Combustion Products

Carbon monoxide, carbon dioxide, lithium oxide fumes.

6. Accidental release measures

Steps to be Taken in case Material is Released or Spilled

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste Disposal method

It is recommended to discharge the battery to the end, to use up the metal lithium inside the battery, and to bury the discharged battery in soil.

7. Handling and storage

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Precautions to be taken in handling and storing

Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other Precautions

The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

8. Exposure controls / personal protection

Respiratory Protection

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use.

Ventilation



Not necessary under conditions of normal use.

Protective Gloves

Not necessary under conditions of normal use.

Other Protective Clothing or Equipment

Not necessary under conditions of normal use.

Personal Protection is recommended for venting battery

Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

9. Physical and chemical properties

Appearance: Quadrate shape

Ref, No.:

Odour: If leaking, smells of medical ether.

pH: Not applicable as supplied.

Flash Point: Not applicable unless individual components exposed.

Flammability: Not applicable unless individual components exposed.

Relative density: Not applicable unless individual components exposed.

Solubility (water): Not applicable unless individual components exposed.

Solubility (other): Not applicable unless individual components exposed.

10. Stability and reactivity

Stability: Product is stable under conditions described in section 7.

Conditions to Avoid: Heat above 70°C or incinerate. Deform. Mutilate. Crush.

Disassemble. Overcharge. Short circuit. Expose over a long period to humid conditions.

Materials to avoid: Oxidising agents, alkalis, water.

Hazardous Decomposition Products: Toxic Fumes, and may form peroxides.

Hazardous Polymerization: N/A

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

11. Toxicological information

Signs & symptoms: None, unless battery ruptures.

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

Inhalation: Lung irritant.

Skin contact: Skin irritant.

Eye contact : Eye irritant

Ingestion : Poisoning if swallowed.

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to severe irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

12. Ecological information

Mammalian effects: None known at present.

Eco-toxicity: None known at present.

Bioaccumulation potential: Slowly Bio-degradable.

Environmental fate: None known environmental hazards at present.

13. Disposal consideration

Do not incinerate, or subject cells to temperature in excess of 70°C, Such abuse can result in loss of seal leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

14. Transport information

Label for conveyance: Lithium Battery Label.

UN Number: UN3481

Packaging Group: N/A

EmS No:4.1-06

Marine pollutant: No

Proper Shipping name: Lithium ion batteries contained in equipment

Hazard Classification: The goods shall be complied with the requirements of Section II of Packing Instructions 967 of 56th DGR Manual of IATA (2015 edition) or special provision 188 of IMDG CODE (Amdt.36-12) 2012 edition, including the passing of the UN38.3 test.

15. Regulation information

Law Information

《Dangerous Goods Regulations》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《International Maritime Dangerous Goods》

《Technical Instructions for the Safe Transport of Dangerous Goods》



- 《Classification and code of dangerous goods》
- 《Occupational Safety and Health Act》 (OSHA)
- 《Toxic Substance Control Act》 (TSCA)
- 《Consumer Product Safety Act》 (CPSA)
- 《Federal Environmental Pollution Control Act》 (FEPCA)
- 《The Oil Pollution Act》 (OPA)
- 《Superfund Amendments and Reauthorization Act Title III (302/311/312/313)》
(SARA)
- 《Resource Conservation and Recovery Act》 (RCRA)
- 《Safety Drinking Water Act》 (CWA)
- 《California Proposition 65》
- 《Code of Federal Regulations》 (CFR)

16. Other information

The data in this Material Safety Data Sheet relates only to the specific material designate herein.

For more information, please contact:

Chen jie

Quality Engineer

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MSDS Creation Date : 2015-02-05

SAFETY DATA SHEET

HCS-2012 APPENDIX D TO §1910.1200

Version 1

Product Name 3.7V lithium polymer battery; 3.7V Lithium-ion rechargeable battery

Issue Date 12-Mar-2015

Revision date 12-Mar-2015

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name 3.7V lithium polymer battery; 3.7V Lithium-ion rechargeable battery
Chemical Name Lithium-ion battery

Other means of identification

Product Code 795080
Voltage: 3.7V
Ampere hour: 3500MAH

Recommended use of the chemical and restrictions on use

Recommended Use Power supply
Uses advised against No information available

Details of the supplier of the safety data sheet

Company name ShenZhen CLN Electronics Co., Ltd
Address Room 2014-2015, District B, Bao an Internet CSIB, Bao an Centre District, ShenZhen, China
Postal Code 518000
Phone +86-755-29955410
FAX -
E-mail grace@clnsz.com

Emergency telephone number

+86-755-29955410

2. HAZARDS IDENTIFICATION

GHS Classification

Not classified according to GHS as an article.

Label elements

Symbols/Pictograms None
Signal word None
Hazard Statements None
Precautionary Statements
Prevention None
Response None
Storage None
Disposal None

Hazards not otherwise classified (HNOC)

No information available

Unknown acute toxicity

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature Mixture

Chemical Name	CAS No	Weight-%
Lithium Cobalt Oxide (CoLiO ₂)	12190-79-3	54
Graphite	7782-42-5	22
Copper	7440-50-8	9
Aluminum foil	7429-90-5	6
Nickel	7440-02-0	4
Polyethylene	9002-88-4	2
Phosphate(1-), hexafluoro-, lithium	21324-40-3	1.2
Polypropylene	9003-07-0	1
1,1-Difluoroethylene polymer	24937-79-9	0.5
Styrene-Butadiene polymer	9003-55-8	0.2
Sodium carboxymethyl cellulose	9004-32-4	0.1

4. FIRST AID MEASURES**Description of first aid measures**

General advice	Remove contaminated clothing and shoes. If symptoms persist, call a physician.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, call a physician.
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
Ingestion	Rinse mouth Get medical attention Never give anything by mouth to an unconscious person

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES**Extinguishing media**

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors

Carbon oxides (CO_x)

metal oxides

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Evacuate personnel to safe areas
 Ensure adequate ventilation, especially in confined areas
 Remove all sources of ignition
 Use personal protection recommended in Section 8
 Avoid contact with skin, eyes or clothing
 Do not touch or walk through spilled material
 Avoid breathing vapors or mists

Methods and material for containment and cleaning up

Prevent further leakage or spillage if safe to do so
 Pick up and transfer to properly labeled containers

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice
 Ensure adequate ventilation, especially in confined areas
 Avoid generation of dust
 Do not breathe dust/fume/gas/mist/vapors/spray
 Avoid contact with skin, eyes or clothing
 Wash thoroughly after handling
 Use personal protection recommended in Section 8
 Take precautionary measures against static discharges
 Do not eat, drink or smoke when using this product

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place
 Keep away from heat

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH	Denmark	European Union
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	TWA: 0.02 mg/m ³ Co	-	-	TWA: 0.01 mg/m ³	-
Graphite (CAS #: 7782-42-5)	TWA: 2 mg/m ³ respirable fraction all forms except graphite fibers	-	-	TWA: 2.5 mg/m ³	-
Copper (CAS #: 7440-50-8)	TWA: 0.2 mg/m ³ fume TWA: 1 mg/m ³ Cu dust and mist	-	-	TWA: 1.0 mg/m ³ TWA: 0.1 mg/m ³	-
Aluminum foil (CAS #: 7429-90-5)	TWA: 1 mg/m ³ respirable fraction	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 5 mg/m ³ Al Aluminum	TWA: 10 mg/m ³ total dust TWA: 5 mg/m ³ respirable dust TWA: 5 mg/m ³ Al	TWA: 5 mg/m ³ TWA: 2 mg/m ³	-
Nickel (CAS #: 7440-02-0)	TWA: 1.5 mg/m ³ inhalable fraction	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ IDLH: 10 mg/m ³ Ni TWA: 0.015 mg/m ³ TWA: 0.015 mg/m ³ except Nickel carbonyl Ni	TWA: 0.05 mg/m ³	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)	TWA: 2.5 mg/m ³ F	-	-	TWA: 2.5 mg/m ³	-

Chemical Name	Latvia	France	Finland	Germany	Italy
Aluminum foil (CAS #: 7429-90-5)	TWA: 2 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 1.5 mg/m ³	TWA: 4 mg/m ³ TWA: 1.5 mg/m ³	-
Nickel (CAS #: 7440-02-0)	TWA: 0.05 mg/m ³	TWA: 1 mg/m ³	TWA: 1 mg/m ³ TWA: 0.1 mg/m ³	Skin	-

Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
Aluminum foil (CAS #: 7429-90-5)	TWA: 2.5 mg/m ³ TWA: 1.2 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 3 mg/m ³	TWA: 0.05 mg/m ³
Nickel (CAS #: 7440-02-0)	TWA: 0.25 mg/m ³	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³	TWA: 0.5 mg/m ³	-

Chemical Name	Norway	United Kingdom	Australia	Austria	Belgium
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	-	-	-	Skin	-
Graphite (CAS #: 7782-42-5)	-	-	3 mg/m ³	STEL 10 mg/m ³ TWA: 5 mg/m ³	-
Copper (CAS #: 7440-50-8)	-	-	1 mg/m ³ 0.2 mg/m ³	STEL 4 mg/m ³ STEL 0.4 mg/m ³ TWA: 1 mg/m ³ TWA: 0.1 mg/m ³	-
Aluminum foil (CAS #: 7429-90-5)	TWA: 5 mg/m ³ STEL: 10 mg/m ³	STEL: 30 mg/m ³ STEL: 12 mg/m ³ TWA: 10 mg/m ³ TWA: 4 mg/m ³	10 mg/m ³ 5 mg/m ³	STEL 20 mg/m ³ TWA: 10 mg/m ³	-
Nickel (CAS #: 7440-02-0)	TWA: 0.05 mg/m ³ STEL: 0.15 mg/m ³	STEL: 1.5 mg/m ³ TWA: 0.5 mg/m ³	1 mg/m ³	-	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)	-	-	2.5 mg/m ³	-	-

Appropriate engineering controls

Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Respiratory protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hand Protection Wear protective gloves.

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Solid
Color	blue
Odor	None
Odor Threshold	Not determined
pH	Not determined
Melting point/freezing point	Not determined
Boiling point / boiling range	Not determined
Flash point	Not applicable
Evaporation rate	Not determined
Flammability (solid, gas)	Not determined
Flammability Limit in Air	Not determined
Vapor Pressure	Not applicable
Vapor density	Not determined
Density	Not determined

Relative density	Not determined
Bulk density	Not determined
Specific gravity	Not determined
Water solubility	Not determined
Partition coefficient (LogPow)	Not determined
Autoignition temperature	Not determined
Decomposition temperature	Not determined
Kinematic viscosity	Not determined
Dynamic viscosity	Not determined
Explosive properties	Not an explosive
Oxidizing properties	Not determined

Other information

No information available

10. STABILITY AND REACTIVITY**Reactivity**

Stable under recommended storage and handling conditions (see SECTION 7, handling and storage).

Chemical stability

Stable under normal conditions

Possibility of Hazardous Reactions

None under normal processing

Conditions to avoid

Extremes of temperature and direct sunlight

Incompatible materials

None known based on information supplied

Hazardous Decomposition Products

None under normal use conditions

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Inhalation	Inhalation of vapors in high concentration may cause irritation of respiratory system
Eye contact	Contact with eyes may cause irritation
Skin Contact	Substance may cause slight skin irritation
Ingestion	Ingestion may cause irritation to mucous membranes

Information on toxicological effects**Acute toxicity**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Copper (CAS #: 7440-50-8)	> 2500 mg/kg bw(rat)	> 2000 mg/kg bw(rat)	=1.03 mg/L/4 h(rat)
Nickel (CAS #: 7440-02-0)	> 9000 mg/kg (Rat)	-	-
Polypropylene (CAS #: 9003-07-0)	>5 g/kg	-	-

Skin corrosion/irritation

Non-irritating to the skin

Serious eye damage/eye irritation

No eye irritation

Sensitization

No information available

Germ cell mutagenicity

No information available

Carcinogenicity

This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B)

Chemical Name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	A3	-	-	-
Nickel (CAS #: 7440-02-0)	-	Group 2B	Known Reasonably Anticipated	X

Reproductive toxicity

No information available

STOT - single exposure

No information available

STOT - repeated exposure

No information available

Aspiration hazard

No information available

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	-	275 mg/L/96h (Fundulus heteroclitus)	-
Copper (CAS #: 7440-50-8)	0.031 - 0.054 mg/L/96h Pseudokirchneriella subcapitata static 0.0426 - 0.0535 mg/L/72h Pseudokirchneriella subcapitata static	-	-
Nickel (CAS #: 7440-02-0)	0.18 mg/L/72h Pseudokirchneriella subcapitata 0.174 - 0.311 mg/L/96h Pseudokirchneriella subcapitata static	100 mg/L/96h Brachydanio rerio 1.3 mg/L/96h Cyprinus carpio semi-static 10.4 mg/L/96h Cyprinus carpio static	100 mg/L/48h Daphnia magna 1 mg/L/48h Daphnia magna Static

Persistence and degradability

No information available

Bioaccumulative potential

No information available

Mobility in soil

No information available

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations
 Contaminated packaging Dispose of in accordance with federal, state and local regulations

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Nickel 7440-02-0	-	Included in waste streams: F006, F039	-	-

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

Chemical Name	California Hazardous Waste Status
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	Toxic
Copper 7440-50-8	Toxic
Aluminum foil 7429-90-5	Ignitable powder
Nickel 7440-02-0	Toxic powder Ignitable powder

14. TRANSPORT INFORMATION

According to the packaging instruction 967 section II of IATA DGR 56th Edition for transportation.
 According to the packaging provision 188 of IMDG or the Recommendation on the Transportation of Dangerous Goods-Model Regulation (18th).
 The products are not subjects to dangerous goods.

DOT

UN/ID No. Not regulated
Proper shipping name Not regulated
Hazard Class Not regulated
Packing Group Not regulated
Special precautions Not regulated
Marine pollutant Not regulated
Description Not regulated
Emergency Response Guide Number Not regulated

15. REGULATORY INFORMATION

International Inventories

Component	AICS	DSL/NDSL	EINECS/ELI NCS	ENCS	IECSC	KECL	PICCS	TSCA
Lithium Cobalt Oxide (CoLiO2) 12190-79-3 (30 - 60)	X	X	X	X	X	X	-	X
Graphite 7782-42-5 (10 - 30)	X	X	X	-	X	X	X	X
Copper 7440-50-8 (5 - 10)	X	X	X	-	X	X	X	X
Aluminum foil 7429-90-5 (3 - 7)	X	X	X	-	X	X	X	X
Nickel 7440-02-0 (1 - 5)	X	X	X	-	X	X	X	X
Polyethylene 9002-88-4 (1 - 5)	X	X	-	X	X	X	X	X

Phosphate(1-), hexafluoro-, lithium 21324-40-3 (1 - 5)	X	X	X	X	X	X	X	X
Polypropylene 9003-07-0 (1 - 5)	X	X	-	X	X	X	X	X
1,1-Difluoroethylene polymer 24937-79-9 (0.1 - 1)	X	X	-	X	X	X	X	X
Styrene-Butadiene polymer 9003-55-8 (0.1 - 1)	X	X	-	X	X	X	X	X
Sodium carboxymethyl cellulose 9004-32-4 (0.1 - 1)	X	X	-	X	X	X	X	X

"-" Not Listed

"X" Listed

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Aluminum foil - 7429-90-5	1.0
Nickel - 7440-02-0	0.1

SARA 311/312 Hazard Categories

Does not apply

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Copper 7440-50-8	-	X	X	-
Nickel 7440-02-0	-	X	X	-

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Nickel 7440-02-0	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Nickel - 7440-02-0	Carcinogen

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania

Aluminum foil 7429-90-5	X	X	X
Nickel 7440-02-0	X	X	X

16. OTHER INFORMATION

Revision Note

Issue Date 12-Mar-2015
Revision date 08-Jan-2015
Revision Note Not applicable

Key or legend to abbreviations and acronyms used in the safety data sheet

TWA - TWA (time-weighted average)

STEL - STEL (Short Term Exposure Limit)

Ceiling - Maximum limit value

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

----- End of Safety Data Sheet -----

Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN
Product name: Battery

Revision date: 28/08/2013
Printing date: 28/08/2013

1. Identification

(a) Product identifier

Product name: Battery

(b) Other means of identification

Product description: Model: SZNS18650-2600mAh
Product Code: 406978
Nominal Voltage: 3.7V
Ampere-hour: 2.6Ah
Typical Capacity: 2600mAh
Lithium content: 0.54g
Weight: 45.83g
Dimension: 66.3mm×18.3mm (L×D)

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

Recommended use: Battery.
Restriction on use: No information available.

(d) Details of the supplier of the product

Company name(China) Shenzhen Good&Easy Technology Co., Ltd.
Address: 2/F, Building C6, Hengfeng Industrial Park, Xixiang Town, Bao'an District, Shenzhen, China
E-mail: coco@wangrise.com
Telephone: +86-755-29990740

(e) Emergency phone number

+86-755-29990740

2. Hazard(s) identification

(a) Classification of the chemical

The batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. A sealed Li-ion Battery is not hazardous in normal use.

(b) Label elements

Pictogram(s): No pictogram.
Signal word: No signal word.
Hazard statements: No hazard statement.
Precautionary statements: No precautionary statement.

(c) Description of any hazards not otherwise classified

In case of mistreatment (abusive over charge, reverse charge, external short circuit...) and in case of fault some electrolyte can leak from the cell through the safety device. In these cases refer to the risk of the electrolyte. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. The electrode materials are only hazardous, if the materials are released by mechanical damaging of the cell or if exposed to fire.

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Skin touch: Contact with battery electrolyte may cause burns and skin irritation.

Eyes touch: Contact with battery electrolyte may cause burns. Eye damage is possible.

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.

(d) Ingredient with unknown acute toxicity

No information available.

3. Composition/information on ingredients

(a) Mixtures information

Chemical name	CAS No.	Concentration%
Lithium cobalt oxide(LiCoO ₂)	12190-79-3	23
Lithium manganese oxide	12057-17-9	23
Graphite	7782-42-5	18
Copper	7440-50-8	11
Steel Shell	12597-69-2	7.3
Aluminum Foils	7429-90-5	5
Electrolyte	1073-05-8	5
Butadiene-styrene copolymer	9003-55-8	2.2
Polyvinylidene Fluoride	24937-79-9	2
PE Separator	90989-93-8	2
Naphthenic acids, nickel salts	61788-71-4	1.5

4. First-aid measures

(a) Description of first aid measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice / attention if you feel unwell.

Skin contact: Remove contaminated clothes and rinse the skin with plenty of water. Get medical advice / attention if you feel unwell.

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice / attention if you feel unwell.

Ingestion: Have victim drink 60 to 240 mL (2-8 oz.) of water. and DO NOT induce vomiting. Get medical aid.

(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

(a) Extinguishing media

Suitable extinguishing media: Use foam, dry powder or dry sand, CO₂ as appropriate.

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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, CO₂, 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

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) Methods and materials for containment and cleaning up

If 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 Lithium Battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the Lithium Battery periodically. Operating temperature: Charge: 0°C~45°C. Discharge: -20°C~60°C And recommended at -20°C~45°C for 1 month storage, at -20°C~35°C for 3 months storage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. The voltage for a long time storage shall be 3.7V~4.2V range. Do not storage Lithium 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

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According to HCS-2012 APPENDIX D TO §1910.1200

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Printing date: 28/08/2013

(a) Control parameters

Not established.

(b) Appropriate engineering controls

Under normal conditions (during charge and discharge) release of ingredients does not occur.

(c) Personal protective equipment

Respiratory protection:	No personal respiratory protective equipment normally required. In case of inadequate ventilation wear respiratory protection.
Hand protection:	Wear protective gloves.
Eye/face protection:	No personal protective equipment normally required.
Skin/body protection:	Wear protective clothing to prevent contact.

9. Physical and chemical properties

(a) Appearance	Green translucent solid
(b) Odor	Monotony
(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.

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Product name: Battery

Revision date: 28/08/2013
Printing date: 28/08/2013

(d) Conditions to avoid

Do not subject Lithium 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 2, 3, and 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.

12. Ecological information

(a) Ecotoxicity

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

(b) Persistence and Degradability

No information available.

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Product name: Battery

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(c) Bioaccumulative potential

No information available.

(d) Mobility in soil

No information available.

(e) Other adverse effects

No information available.

13. Disposal considerations

(a) 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.

14. Transport information

According to PACKING INSTRUCTION 965 ~ 970 of IATA DGR 56rd Edition for transportation, the special provision 188 of IMDG (inc Amdt 35-10). 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** 3480&3481
- (b) UN Proper shipping name** LITHIUM ION BATTERIES (including lithium ion polymer batteries) or; LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)
- (c) Transport hazard class(es)** 9
- (d) Packing group (if applicable)** II
- (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

(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
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Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN
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Printing date: 28/08/2013

12190-79-3	Listed	Listed	Listed	Listed	Listed	Listed
12057-17-9	Listed	Not listed	Not listed	Listed	Not listed	Not listed
7782-42-5	Listed	Listed	Not listed	Listed	Listed	Listed
7440-50-8	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed
12597-69-2	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed
7429-90-5	Listed	Listed	Not listed	Listed	Listed	Listed
1073-05-8	Listed	Listed	Listed	Listed	Listed	Listed
9003-55-8	Listed	Not listed	Listed	Listed	Listed	Listed
24937-79-9	Listed	Not listed	Listed	Listed	Listed	Listed
90989-93-8	Not listed	Listed	Not listed	Not listed	Not listed	Not listed
61788-71-4	Listed	Listed	Listed	Listed	Listed	Listed

Remark: The above-mentioned search results are based on the Non-Confidential Inventory.

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: 28/08/2013

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 -----

SAFETY DATA SHEET

HCS-2012 APPENDIX D TO §1910.1200

Version 1

Product Name 3.7V lithium polymer battery; 3.7V Lithium-ion rechargeable battery

Issue Date 12-Mar-2015

Revision date 12-Mar-2015

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name 3.7V lithium polymer battery; 3.7V Lithium-ion rechargeable battery
Chemical Name Lithium-ion battery

Other means of identification

Product Code 795080
Voltage: 3.7V
Ampere hour: 3500MAH

Recommended use of the chemical and restrictions on use

Recommended Use Power supply
Uses advised against No information available

Details of the supplier of the safety data sheet

Company name ShenZhen CLN Electronics Co., Ltd
Address Room 2014-2015, District B, Bao an Internet CSIB, Bao an Centre District, ShenZhen, China
Postal Code 518000
Phone +86-755-29955410
FAX -
E-mail grace@clnsz.com

Emergency telephone number

+86-755-29955410

2. HAZARDS IDENTIFICATION

GHS Classification

Not classified according to GHS as an article.

Label elements

Symbols/Pictograms None
Signal word None
Hazard Statements None
Precautionary Statements
Prevention None
Response None
Storage None
Disposal None

Hazards not otherwise classified (HNOC)

No information available

Unknown acute toxicity

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature Mixture

Chemical Name	CAS No	Weight-%
Lithium Cobalt Oxide (CoLiO ₂)	12190-79-3	54
Graphite	7782-42-5	22
Copper	7440-50-8	9
Aluminum foil	7429-90-5	6
Nickel	7440-02-0	4
Polyethylene	9002-88-4	2
Phosphate(1-), hexafluoro-, lithium	21324-40-3	1.2
Polypropylene	9003-07-0	1
1,1-Difluoroethylene polymer	24937-79-9	0.5
Styrene-Butadiene polymer	9003-55-8	0.2
Sodium carboxymethyl cellulose	9004-32-4	0.1

4. FIRST AID MEASURES**Description of first aid measures**

General advice	Remove contaminated clothing and shoes. If symptoms persist, call a physician.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, call a physician.
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
Ingestion	Rinse mouth Get medical attention Never give anything by mouth to an unconscious person

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES**Extinguishing media**

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
 Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors
 Carbon oxides (CO_x)
 metal oxides

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Evacuate personnel to safe areas
 Ensure adequate ventilation, especially in confined areas
 Remove all sources of ignition
 Use personal protection recommended in Section 8
 Avoid contact with skin, eyes or clothing
 Do not touch or walk through spilled material
 Avoid breathing vapors or mists

Methods and material for containment and cleaning up

Prevent further leakage or spillage if safe to do so
 Pick up and transfer to properly labeled containers

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice
 Ensure adequate ventilation, especially in confined areas
 Avoid generation of dust
 Do not breathe dust/fume/gas/mist/vapors/spray
 Avoid contact with skin, eyes or clothing
 Wash thoroughly after handling
 Use personal protection recommended in Section 8
 Take precautionary measures against static discharges
 Do not eat, drink or smoke when using this product

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place
 Keep away from heat

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH	Denmark	European Union
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	TWA: 0.02 mg/m ³ Co	-	-	TWA: 0.01 mg/m ³	-
Graphite (CAS #: 7782-42-5)	TWA: 2 mg/m ³ respirable fraction all forms except graphite fibers	-	-	TWA: 2.5 mg/m ³	-
Copper (CAS #: 7440-50-8)	TWA: 0.2 mg/m ³ fume TWA: 1 mg/m ³ Cu dust and mist	-	-	TWA: 1.0 mg/m ³ TWA: 0.1 mg/m ³	-
Aluminum foil (CAS #: 7429-90-5)	TWA: 1 mg/m ³ respirable fraction	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 5 mg/m ³ Al Aluminum	TWA: 10 mg/m ³ total dust TWA: 5 mg/m ³ respirable dust TWA: 5 mg/m ³ Al	TWA: 5 mg/m ³ TWA: 2 mg/m ³	-
Nickel (CAS #: 7440-02-0)	TWA: 1.5 mg/m ³ inhalable fraction	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ IDLH: 10 mg/m ³ Ni TWA: 0.015 mg/m ³ TWA: 0.015 mg/m ³ except Nickel carbonyl Ni	TWA: 0.05 mg/m ³	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)	TWA: 2.5 mg/m ³ F	-	-	TWA: 2.5 mg/m ³	-

Chemical Name	Latvia	France	Finland	Germany	Italy
Aluminum foil (CAS #: 7429-90-5)	TWA: 2 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 1.5 mg/m ³	TWA: 4 mg/m ³ TWA: 1.5 mg/m ³	-
Nickel (CAS #: 7440-02-0)	TWA: 0.05 mg/m ³	TWA: 1 mg/m ³	TWA: 1 mg/m ³ TWA: 0.1 mg/m ³	Skin	-

Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
Aluminum foil (CAS #: 7429-90-5)	TWA: 2.5 mg/m ³ TWA: 1.2 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 3 mg/m ³	TWA: 0.05 mg/m ³
Nickel (CAS #: 7440-02-0)	TWA: 0.25 mg/m ³	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³	TWA: 0.5 mg/m ³	-

Chemical Name	Norway	United Kingdom	Australia	Austria	Belgium
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	-	-	-	Skin	-
Graphite (CAS #: 7782-42-5)	-	-	3 mg/m ³	STEL 10 mg/m ³ TWA: 5 mg/m ³	-
Copper (CAS #: 7440-50-8)	-	-	1 mg/m ³ 0.2 mg/m ³	STEL 4 mg/m ³ STEL 0.4 mg/m ³ TWA: 1 mg/m ³ TWA: 0.1 mg/m ³	-
Aluminum foil (CAS #: 7429-90-5)	TWA: 5 mg/m ³ STEL: 10 mg/m ³	STEL: 30 mg/m ³ STEL: 12 mg/m ³ TWA: 10 mg/m ³ TWA: 4 mg/m ³	10 mg/m ³ 5 mg/m ³	STEL 20 mg/m ³ TWA: 10 mg/m ³	-
Nickel (CAS #: 7440-02-0)	TWA: 0.05 mg/m ³ STEL: 0.15 mg/m ³	STEL: 1.5 mg/m ³ TWA: 0.5 mg/m ³	1 mg/m ³	-	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)	-	-	2.5 mg/m ³	-	-

Appropriate engineering controls

Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Respiratory protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hand Protection Wear protective gloves.

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Solid
Color	blue
Odor	None
Odor Threshold	Not determined
pH	Not determined
Melting point/freezing point	Not determined
Boiling point / boiling range	Not determined
Flash point	Not applicable
Evaporation rate	Not determined
Flammability (solid, gas)	Not determined
Flammability Limit in Air	Not determined
Vapor Pressure	Not applicable
Vapor density	Not determined
Density	Not determined

Relative density	Not determined
Bulk density	Not determined
Specific gravity	Not determined
Water solubility	Not determined
Partition coefficient (LogPow)	Not determined
Autoignition temperature	Not determined
Decomposition temperature	Not determined
Kinematic viscosity	Not determined
Dynamic viscosity	Not determined
Explosive properties	Not an explosive
Oxidizing properties	Not determined

Other information

No information available

10. STABILITY AND REACTIVITY**Reactivity**

Stable under recommended storage and handling conditions (see SECTION 7, handling and storage).

Chemical stability

Stable under normal conditions

Possibility of Hazardous Reactions

None under normal processing

Conditions to avoid

Extremes of temperature and direct sunlight

Incompatible materials

None known based on information supplied

Hazardous Decomposition Products

None under normal use conditions

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Inhalation	Inhalation of vapors in high concentration may cause irritation of respiratory system
Eye contact	Contact with eyes may cause irritation
Skin Contact	Substance may cause slight skin irritation
Ingestion	Ingestion may cause irritation to mucous membranes

Information on toxicological effects**Acute toxicity**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Copper (CAS #: 7440-50-8)	> 2500 mg/kg bw(rat)	> 2000 mg/kg bw(rat)	=1.03 mg/L/4 h(rat)
Nickel (CAS #: 7440-02-0)	> 9000 mg/kg (Rat)	-	-
Polypropylene (CAS #: 9003-07-0)	>5 g/kg	-	-

Skin corrosion/irritation

Non-irritating to the skin

Serious eye damage/eye irritation

No eye irritation

Sensitization

No information available

Germ cell mutagenicity

No information available

Carcinogenicity

This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B)

Chemical Name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	A3	-	-	-
Nickel (CAS #: 7440-02-0)	-	Group 2B	Known Reasonably Anticipated	X

Reproductive toxicity

No information available

STOT - single exposure

No information available

STOT - repeated exposure

No information available

Aspiration hazard

No information available

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	-	275 mg/L/96h (Fundulus heteroclitus)	-
Copper (CAS #: 7440-50-8)	0.031 - 0.054 mg/L/96h Pseudokirchneriella subcapitata static 0.0426 - 0.0535 mg/L/72h Pseudokirchneriella subcapitata static	-	-
Nickel (CAS #: 7440-02-0)	0.18 mg/L/72h Pseudokirchneriella subcapitata 0.174 - 0.311 mg/L/96h Pseudokirchneriella subcapitata static	100 mg/L/96h Brachydanio rerio 1.3 mg/L/96h Cyprinus carpio semi-static 10.4 mg/L/96h Cyprinus carpio static	100 mg/L/48h Daphnia magna 1 mg/L/48h Daphnia magna Static

Persistence and degradability

No information available

Bioaccumulative potential

No information available

Mobility in soil

No information available

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations
 Contaminated packaging Dispose of in accordance with federal, state and local regulations

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Nickel 7440-02-0	-	Included in waste streams: F006, F039	-	-

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

Chemical Name	California Hazardous Waste Status
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	Toxic
Copper 7440-50-8	Toxic
Aluminum foil 7429-90-5	Ignitable powder
Nickel 7440-02-0	Toxic powder Ignitable powder

14. TRANSPORT INFORMATION

According to the packaging instruction 967 section II of IATA DGR 56th Edition for transportation.
 According to the packaging provision 188 of IMDG or the Recommendation on the Transportation of Dangerous Goods-Model Regulation (18th).
 The products are not subjects to dangerous goods.

DOT

UN/ID No. Not regulated
Proper shipping name Not regulated
Hazard Class Not regulated
Packing Group Not regulated
Special precautions Not regulated
Marine pollutant Not regulated
Description Not regulated
Emergency Response Guide Number Not regulated

15. REGULATORY INFORMATION

International Inventories

Component	AICS	DSL/NDSL	EINECS/ELI NCS	ENCS	IECSC	KECL	PICCS	TSCA
Lithium Cobalt Oxide (CoLiO2) 12190-79-3 (30 - 60)	X	X	X	X	X	X	-	X
Graphite 7782-42-5 (10 - 30)	X	X	X	-	X	X	X	X
Copper 7440-50-8 (5 - 10)	X	X	X	-	X	X	X	X
Aluminum foil 7429-90-5 (3 - 7)	X	X	X	-	X	X	X	X
Nickel 7440-02-0 (1 - 5)	X	X	X	-	X	X	X	X
Polyethylene 9002-88-4 (1 - 5)	X	X	-	X	X	X	X	X

Phosphate(1-), hexafluoro-, lithium 21324-40-3 (1 - 5)	X	X	X	X	X	X	X	X
Polypropylene 9003-07-0 (1 - 5)	X	X	-	X	X	X	X	X
1,1-Difluoroethylene polymer 24937-79-9 (0.1 - 1)	X	X	-	X	X	X	X	X
Styrene-Butadiene polymer 9003-55-8 (0.1 - 1)	X	X	-	X	X	X	X	X
Sodium carboxymethyl cellulose 9004-32-4 (0.1 - 1)	X	X	-	X	X	X	X	X

"-" Not Listed
 "X" Listed

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Aluminum foil - 7429-90-5	1.0
Nickel - 7440-02-0	0.1

SARA 311/312 Hazard Categories

Does not apply

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Copper 7440-50-8	-	X	X	-
Nickel 7440-02-0	-	X	X	-

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Nickel 7440-02-0	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Nickel - 7440-02-0	Carcinogen

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania

Aluminum foil 7429-90-5	X	X	X
Nickel 7440-02-0	X	X	X

16. OTHER INFORMATION

Revision Note

Issue Date	12-Mar-2015
Revision date	08-Jan-2015
Revision Note	Not applicable

Key or legend to abbreviations and acronyms used in the safety data sheet

TWA - TWA (time-weighted average)

STEL - STEL (Short Term Exposure Limit)

Ceiling - Maximum limit value

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

----- End of Safety Data Sheet -----