

# SAFETY DATA SHEET

HCS-2012 APPENDIX D TO §1910.1200

Version 2  
Product Name Li-Ion Battery

Issue Date 12-Aug-2014  
Revision date 27-Aug-2015

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

### Product identifier

Product Name Li-Ion Battery  
Product Code ISR18650

### Other means of identification

Product description: Nominal Voltage: 3.7V  
Ampere-hour: 2.0Ah  
Lithium content(g): 0.6-0.9g

### Recommended use of the chemical and restrictions on use

Recommended Use Battery for electronic products  
Uses advised against No information available

### Details of the supplier of the safety data sheet

Supplier Jiangsu Highstar Battery Manufacturing Co., Ltd.  
Address No.306 Heping Road(s), Qidong City, Jiangsu, China  
Postal Code 226200  
Phone 86- 513-80795666  
FAX 86-513-83312306  
E-mail chenjj@highstar.net.cn

### Emergency telephone number

86-513-80795666

## 2. HAZARDS IDENTIFICATION

### GHS - Classification

Not classified.

### Label elements

Symbols/Pictograms None  
Signal word None  
Hazard Statements Not classified  
Precautionary Statements Not applicable

### Hazards not otherwise classified (HNOC)

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.

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.

**Unknown acute toxicity**

91 % of the mixture consists of ingredient(s) of unknown toxicity

**3. COMPOSITION/INFORMATION ON INGREDIENTS****Chemical nature**

Mixture

Chemical Name	CAS No	Weight-%
Nickel cobalt manganese composite hydroxide	-	30-32%
Iron	7439-89-6	25-26%
Graphite	7782-42-5	14-15%
Copper	7440-50-8	13-15%
Aluminum foil	7429-90-5	6-7%
Polypropylene	9003-07-0	2-3%
Phosphate(1-), hexafluoro-, lithium	21324-40-3	1-2%

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

General advice	In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
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.

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

Contact with internal components may cause allergic skin sensitization (rash) and irritate eyes, skin, nose, throat, respiratory system.

**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

**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**

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

**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 contact with skin, eyes or clothing
- Wash contaminated clothing before reuse
- Take precautionary measures against static discharges
- Do not breathe dust/fume/gas/mist/vapors/spray
- Do not eat, drink or smoke when using this product
- Wash thoroughly after handling
- Use personal protection recommended in Section 8

**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
Graphite 7782-42-5	TWA: 2 mg/m <sup>3</sup> respirable fraction all forms except graphite fibers	-	-
Copper 7440-50-8	TWA: 0.2 mg/m <sup>3</sup> fume TWA: 1 mg/m <sup>3</sup> Cu dust and mist	-	-
Aluminum foil 7429-90-5	TWA: 1 mg/m <sup>3</sup> respirable fraction	TWA: 15 mg/m <sup>3</sup> total dust TWA: 5 mg/m <sup>3</sup> respirable fraction (vacated) TWA: 15 mg/m <sup>3</sup> total dust (vacated) TWA: 5 mg/m <sup>3</sup> respirable fraction (vacated) TWA: 5 mg/m <sup>3</sup> Al Aluminum	TWA: 10 mg/m <sup>3</sup> total dust TWA: 5 mg/m <sup>3</sup> respirable dust TWA: 5 mg/m <sup>3</sup> Al

**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

<b>Physical state</b>	Solid
<b>Appearance</b>	Cylindrical battery
<b>Color</b>	blue
<b>Odor</b>	None
<b>Odor Threshold</b>	No information available
<b>pH</b>	No information available
<b>Melting point/freezing point</b>	No information available
<b>Boiling point / boiling range</b>	No information available
<b>Flash point</b>	No information available
<b>Evaporation rate</b>	No information available
<b>Flammability (solid, gas)</b>	No information available
<b>Flammability Limit in Air</b>	No information available
<b>Vapor Pressure</b>	No information available
<b>Vapor density</b>	No information available
<b>Density</b>	No information available
<b>Bulk density</b>	No information available
<b>Specific gravity</b>	No information available
<b>Water solubility</b>	No information available
<b>Solubility in other solvents</b>	No information available
<b>Partition coefficient</b>	No information available
<b>Autoignition temperature</b>	No information available
<b>Decomposition temperature</b>	No information available
<b>Kinematic viscosity</b>	No information available
<b>Dynamic viscosity</b>	No information available
<b>Explosive properties</b>	Not an explosive
<b>Oxidizing properties</b>	Not applicable

### 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 recommended storage 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 known based on information supplied

## 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**

No data available.

**Skin corrosion/irritation**

The liquid in the battery irritates.

**Serious eye damage/eye irritation**

The liquid in the battery irritates.

**Sensitization**

The liquid in the battery may cause sensitization to some person.

**Germ cell mutagenicity**

No information available

**Carcinogenicity**

No information available

**Reproductive toxicity**

No information available

**STOT - single exposure**

No information available

**STOT - repeated exposure**

No information available

**Aspiration hazard**

No information available

**Target Organ Effects**

eyes, Respiratory system, Skin.

**12. ECOLOGICAL INFORMATION****Ecotoxicity**

Very toxic to aquatic life with long lasting effects

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
Iron 7439-89-6	-	-	> 100 mg/L/48h (Daphnia magna)
Copper 7440-50-8	0.031 - 0.054 mg/L/96h Pseudokirchneriella subcapitata static 0.0426 - 0.0535 mg/L/72h Pseudokirchneriella subcapitata 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	California Hazardous Waste Status
Copper 7440-50-8	Toxic
Aluminum foil 7429-90-5	Ignitable powder

**14. TRANSPORT INFORMATION**

**DOT**

**UN/ID No.** Not regulated  
**Proper shipping name** Not regulated  
**Hazard Class** Not regulated  
**Packing Group** Not regulated  
**Special Provisions** None  
**Marine pollutant** This product contains a chemical which is listed as a severe marine pollutant according to DOT

**IATA**

**IMDG**

Not regulated  
 Not regulated

The Lithium Ion Battery has passed the test UN38.3 test, according to the test report ID: No. 1114050002

According to the packaging instruction 967 section II of IATA DGR 54<sup>th</sup> Edition for transportation.

According to the packaging provision 188 of IMDG or the Recommendation on the Transportation of Dangerous Goods-Model Regulation (17th).

The products are not subjects to dangerous.

## 15. REGULATORY INFORMATION

### International Inventories

Component	AICS	DSL/NDSL	EINECS/ELI NCS	ENCS	IECSC	KECL	PICCS	TSCA
Iron 7439-89-6 ( 10 - 30 )	X	X	X	-	X	X	X	X
Graphite 7782-42-5 ( 10 - 30 )	X	X	X	-	X	X	X	X
Copper 7440-50-8 ( 10 - 30 )	X	X	X	-	X	X	X	X
Aluminum foil 7429-90-5 ( 5 - 10 )	X	X	X	-	X	X	X	X
Polypropylene 9003-07-0 ( 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

"-" 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

### SARA 311/312 Hazard Categories

#### CWA (Clean Water Act)

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

### CERCLA

### US State Regulations

#### California Proposition 65

#### U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Aluminum foil 7429-90-5	X	X	X

## 16. OTHER INFORMATION

### Revision Note

Issue Date 20-Apr-2014  
Revision date 27-Aug-2015  
Revision Note Not applicable

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

- TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
- DSL/NDL** - 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 -----