

SAFETY DATA SHEET

HCS-2012 APPENDIX D TO §1910.1200

Version 1

Product Name Lithium Ion Battery ISR18650 3.7V 1500mAh

Issue Date 20-Apr-2014

Revision date 05-May-2015

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

Product identifier

Product Name Lithium Ion Battery ISR18650 3.7V 1500mAh
Product Code ISR18650

Other means of identification

Product description: Nominal Voltage: 3.7V
Ampere-hour: 1.5Ah
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 according to GHS as article.

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-% |
|--|------------|----------|
| Lithium Cobalt Oxide (CoLiO ₂) | 12190-79-3 | 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 ³ respirable fraction all forms except graphite fibers | - | - |
| Copper 7440-50-8 | TWA: 0.2 mg/m ³ fume TWA: 1 mg/m ³ Cu dust and mist | - | - |
| Aluminum foil 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 |

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

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

Not regulated

IMDG

Not regulated

The Lithium Ion Battery has passed the test UN38.3 test, according to the test report ID: No. 1112050127

According to the packaging instruction 967 section II of IATA DGR 54th 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 |
|---|------|----------|-------------------|------|-------|------|-------|------|
| Lithium Cobalt Oxide (CoLiO2) 12190-79-3 | X | X | X | X | X | X | X | X |
| Iron 7439-89-6 | X | X | X | - | X | X | X | X |
| Graphite 7782-42-5 | X | X | X | - | X | X | X | X |
| Copper 7440-50-8 | X | X | X | - | X | X | X | X |
| Aluminum foil 7429-90-5 | X | X | X | - | X | X | X | X |
| Polypropylene 9003-07-0 | X | X | - | X | X | X | X | X |
| Lithium Cobalt Oxide (CoLiO2) 21324-40-3 | 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 |
| Lithium 7439-93-2 | X | X | X |

16. OTHER INFORMATION

Revision Note

Issue Date 20-Apr-2014
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 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 -----