

SAFETY DATA SHEET

HCS-2012 APPENDIX D TO §1910.1200

Version 1
Product Name Lithium-ion rechargeable battery- ICR18500

Issue Date 03-Jun-2015
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1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Lithium-ion rechargeable battery-ICR18500
Chemical Name Li-ion Battery-ICR18500

Other means of identification

Product Code ICR18500
Voltage 3.7V
Watt-Hour 5.55
Battery Weight 0.035Kg

Recommended use of the chemical and restrictions on use

Recommended Use Used in electric tools, flashlight, etc
Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier SHENZHEN ALLKEY BATTERY CO.,LTD
Address 4/F, HONGWAN Commercial Building, 4235# Bao'an Road, Bao'an, ShenZhen
Postal Code 518126
Phone +86-755-29957377
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Emergency telephone number

+86-13823368991

2. HAZARDS IDENTIFICATION

GHS Classification

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

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

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature Mixture

Chemical Name	CAS No	Weight-%
Lithium Cobalt Oxide (CoLiO ₂)	12190-79-3	15 - 40
Graphite	7782-42-5	10 - 30
Phosphate(1-), hexafluoro-, lithium	21324-40-3	10 - 30
Copper	7440-50-8	5 - 10
Aluminum	7429-90-5	3 - 7
Ethylene carbonate	96-49-1	1 - 5
Rubber, butadiene styrene	61789-96-6	1 - 5
1,1-Difluoroethylene polymer	24937-79-9	1 - 5
Polypropylene	9003-07-0	0.1 - 1
Polyethylene	9002-88-4	<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	Not an expected route of exposure. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Skin Contact	Wash hands thoroughly after handling. .
Eye contact	Not an expected route of exposure. .
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

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

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
 Avoid release to the environment

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 creating dust
- Avoid contact with eyes
- 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	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	-	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ natural respirable dust	TWA: 2.5 mg/m ³	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)	TWA: 2.5 mg/m ³ F	-	-	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	-	IDLH: 100 mg/m ³ dust, fume and mist IDLH: 100 mg/m ³ Cu dust and mist TWA: 1 mg/m ³ dust and mist TWA: 0.1 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 (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	-

Chemical Name	Latvia	France	Finland	Germany	Italy
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)		-	TWA: 0.02 mg/m ³	Skin	-
Graphite (CAS #: 7782-42-5)	TWA: 2 mg/m ³	TWA: 2 mg/m ³	TWA: 2 mg/m ³	TWA: 1.5 mg/m ³ TWA: 4 mg/m ³	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)		-	-	TWA: 1 mg/m ³ Skin	-
Copper (CAS #: 7440-50-8)	TWA: 0.5 mg/m ³ STEL: 1 mg/m ³	TWA: 0.2 mg/m ³ TWA: 1 mg/m ³ STEL: 2 mg/m ³	TWA: 1 mg/m ³ TWA: 0.1 mg/m ³	TWA: 0.01 mg/m ³ Ceiling / Peak: 0.02 mg/m ³ Ceiling / Peak: 0.2 mg/m ³	-
Aluminum (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	-
Polypropylene (CAS #: 9003-07-0)	TWA: 5 mg/m ³	-	-	-	-
Polyethylene (CAS #: 9002-88-4)	TWA: 5 mg/m ³	-	-	-	-

Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
Copper (CAS #: 7440-50-8)	-	-	-	-	TWA: 0.1 mg/m ³
Aluminum (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	-

Chemical Name	Norway	United Kingdom	Australia	Austria	Belgium
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	TWA: 0.02 mg/m ³ STEL: 0.02 mg/m ³	-	-	Skin	-
Graphite (CAS #: 7782-42-5)	TWA: 5 mg/m ³ TWA: 2 mg/m ³ TWA: 10 mg/m ³ TWA: 4 mg/m ³ STEL: 5 mg/m ³ STEL: 2 mg/m ³ STEL: 10 mg/m ³ STEL: 4 mg/m ³	-	3 mg/m ³	STEL 10 mg/m ³ TWA: 5 mg/m ³	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)	-	-	2.5 mg/m ³	-	-
Copper (CAS #: 7440-50-8)	TWA: 0.1 mg/m ³ TWA: 1 mg/m ³ STEL: 0.1 mg/m ³ STEL: 1 mg/m ³	-	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 (CAS #: 7429-90-5)	TWA: 5 mg/m ³ STEL: 5 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	-

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 No special technical protective measures are necessary.

Skin and body protection Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Solid
Color	Silver
Odor	Odorless
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

Strong heating. Incompatible materials

Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

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**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Graphite (CAS #: 7782-42-5)	> 2000 mg/kg (rat)	-	> 2000 mg/m ³ /4h (rat)
Copper (CAS #: 7440-50-8)	> 2500 mg/kg bw(rat)	> 2000 mg/kg bw(rat)	=1.03 mg/L/4 h(rat)
Aluminum (CAS #: 7429-90-5)	LD50> 15900 mg/kg bw(rat)	-	LC50> 0.888 mg/L/4 h(rat)
Ethylene carbonate (CAS #: 96-49-1)	= 10 g/kg (Rat)	> 3 g/kg (Rabbit)	-
Rubber, butadiene styrene (CAS #: 61789-96-6)	= 71300 µL/kg (Rat)	> 20 mL/kg (Rabbit)	-
Polypropylene (CAS #: 9003-07-0)	>5 g/kg	-	-
Polyethylene (CAS #: 9002-88-4)	= 8 g/kg (Rat)	-	-

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

Chemical Name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO ₂) (CAS #: 12190-79-3)	A3	Group 2B	-	-
Polypropylene (CAS #: 9003-07-0)	-	Group 3	-	-
Polyethylene (CAS #: 9002-88-4)	-	Group 3	-	-

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)	-
Graphite (CAS #: 7782-42-5)	> 100 mg/l/72h (Pseudokirchneriella subcapitata)	> 100 mg/l/96h (Danio rerio)	> 100 mg/l/48h (Daphnia magna)
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	1.25: 96 h Lepomis macrochirus mg/L LC50 static 0.3: 96 h Cyprinus carpio mg/L LC50 semi-static 0.8: 96 h Cyprinus carpio mg/L LC50 static 0.112: 96 h Poecilia reticulata mg/L LC50 flow-through 0.0068 - 0.0156: 96 h Pimephales promelas mg/L LC50 0.3: 96 h Pimephales promelas mg/L LC50 static 0.2: 96 h Pimephales promelas mg/L LC50 flow-through 0.052: 96 h Oncorhynchus mykiss mg/L LC50 flow-through	-
Aluminum (CAS #: 7429-90-5)	-	> 50 mg/L/96h	-

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
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	Toxic
Copper 7440-50-8	Toxic
Aluminum 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 precautions No information available
Marine pollutant Not applicable
UN/ID No. Not Regulated
UN/ID No. Not Regulated
UN/ID No. Not Regulated

15. REGULATORY INFORMATION**International Inventories**

Component	AICS	DSL/NDSL	EINECS/ELI NCS	ENCS	IECSC	KECL	PICCS	TSCA
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3 (15 - 40)	X	X	X	X	X	X	-	X
Graphite 7782-42-5 (10 - 30)	X	X	X	-	X	X	X	X
Phosphate(1-), hexafluoro-, lithium 21324-40-3 (10 - 30)	X	X	X	X	X	X	X	X
Copper 7440-50-8 (5 - 10)	X	X	X	-	X	X	X	X
Aluminum 7429-90-5 (3 - 7)	X	X	X	-	X	X	X	X

Ethylene carbonate 96-49-1 (1 - 5)	X	X	X	X	X	X	X	X
Rubber, butadiene styrene 61789-96-6 (1 - 5)	X	-	X	-	X	-	X	-
1,1-Difluoroethylene polymer 24937-79-9 (1 - 5)	X	X	-	X	X	X	X	X
Polypropylene 9003-07-0 (0.1 - 1)	X	X	-	X	X	X	X	X
Polyethylene 9002-88-4 (<0.1)	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 - 7429-90-5	1.0

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	-

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

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
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	X	-	-
Graphite 7782-42-5	X	X	-
Phosphate(1-), hexafluoro-, lithium 21324-40-3	X	-	-
Copper 7440-50-8	X	X	-
Aluminum 7429-90-5	X	X	X
Ethylene carbonate 96-49-1	-	X	-

16. OTHER INFORMATION

Revision Note

Issue Date	03-Jun-2015
Revision date	03-Jun-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/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 -----