

# SAFETY DATA SHEET

HCS-2012 APPENDIX D TO §1910.1200

Version 1  
Product Name 23A L1028 Cascading Battery

Issue Date 17-Mar-2016  
Revision date 17-Mar-2016

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

### Product identifier

Product Name 23A L1028 Cascading Battery

### Other means of identification

Product Type Alkaline battery  
Product Code Voltage: 12V

### 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

Supplier Guangzhou Huadu Xinjin Industrial Co.,Ltd  
Address Jiuzi village Huadong town HuaDu area GuangZhou city  
Postal Code 510890  
Phone +86-20-81971498  
FAX +86-20-81971102  
E-mail 279385677@qq.com

### Emergency telephone number

+86-13424128956

## 2. HAZARDS IDENTIFICATION

### GHS Classification

Not classified

### 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

Article

Chemical Name	CAS No	Weight-%
Iron	7439-89-6	48 - 52
Manganese dioxide	1313-13-9	25 - 27

Zinc	7440-66-6	8 - 10
Water	7732-18-5	3 - 5
Potassium hydroxide	1310-58-3	2- 4
Polyvinyl chloride	9002-86-2	1 - 3
Nylon-66	32131-17-2	1 - 2
Graphite	7782-42-5	1 - 2
Polyethylene	9002-88-4	0.1 -1

## 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	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. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Ingestion	Not an expected route of exposure. If swallowed, call a poison control center or physician immediately.

### 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

No information available.

### 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. Cool containers with flooding quantities of water until well after fire is out. Evacuate personnel to safe areas.

## 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. Avoid contact with eyes.

### 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 eyes. Wash thoroughly after handling. Take precautionary measures against static discharges.

### Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition. Store in accordance with local regulations.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH	Denmark	European Union
Manganese dioxide (CAS #: 1313-13-9)	TWA: 0.02 mg/m <sup>3</sup> Mn TWA: 0.1 mg/m <sup>3</sup> Mn	(vacated) Ceiling: 5 mg/m <sup>3</sup> Ceiling: 5 mg/m <sup>3</sup> Mn	IDLH: 500 mg/m <sup>3</sup> Mn TWA: 1 mg/m <sup>3</sup> Mn STEL: 3 mg/m <sup>3</sup> Mn	TWA: 0.2 mg/m <sup>3</sup>	-
Potassium hydroxide (CAS #: 1310-58-3)	Ceiling: 2 mg/m <sup>3</sup>	(vacated) Ceiling: 2 mg/m <sup>3</sup>	Ceiling: 2 mg/m <sup>3</sup>	Ceiling: 2 mg/m <sup>3</sup>	-
Polyvinyl chloride (CAS #: 9002-86-2)	TWA: 1 mg/m <sup>3</sup> respirable fraction	-	-	-	-
Graphite (CAS #: 7782-42-5)	TWA: 2 mg/m <sup>3</sup> respirable fraction all forms except graphite fibers	-	IDLH: 1250 mg/m <sup>3</sup> TWA: 2.5 mg/m <sup>3</sup> natural respirable dust	TWA: 2.5 mg/m <sup>3</sup>	-

Chemical Name	Latvia	France	Finland	Germany	Italy
Manganese dioxide (CAS #: 1313-13-9)	TWA: 0.3 mg/m <sup>3</sup>	-	TWA: 0.2 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup>	TWA: 0.2 mg/m <sup>3</sup> TWA: 0.02 mg/m <sup>3</sup> Ceiling / Peak: 1.6 mg/m <sup>3</sup> Ceiling / Peak: 0.16 mg/m <sup>3</sup> TWA: 0.5 mg/m <sup>3</sup>	-
Zinc (CAS #: 7440-66-6)	-	-	-	TWA: 0.1 mg/m <sup>3</sup> TWA: 2 mg/m <sup>3</sup> Ceiling / Peak: 0.4 mg/m <sup>3</sup> Ceiling / Peak: 4 mg/m <sup>3</sup>	-
Potassium hydroxide (CAS #: 1310-58-3)	-	STEL: 2 mg/m <sup>3</sup>	STEL: 2 mg/m <sup>3</sup> Ceiling: 2 mg/m <sup>3</sup>	-	-
Polyvinyl chloride (CAS #: 9002-86-2)	-	-	TWA: 1 mg/m <sup>3</sup>	TWA: 1.5 mg/m <sup>3</sup>	-
Graphite (CAS #: 7782-42-5)	TWA: 2 mg/m <sup>3</sup>	TWA: 2 mg/m <sup>3</sup>	TWA: 2 mg/m <sup>3</sup>	TWA: 1.5 mg/m <sup>3</sup> TWA: 4 mg/m <sup>3</sup>	-
Polyethylene (CAS #: 9002-88-4)	TWA: 5 mg/m <sup>3</sup>	-	-	-	-

Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
Manganese dioxide (CAS #: 1313-13-9)	TWA: 0.3 mg/m <sup>3</sup>	TWA: 0.2 mg/m <sup>3</sup>	TWA: 0.2 mg/m <sup>3</sup>	TWA: 0.5 mg/m <sup>3</sup>	-
Potassium hydroxide (CAS #: 1310-58-3)	STEL: 1 mg/m <sup>3</sup> TWA: 0.5 mg/m <sup>3</sup>	Ceiling: 2 mg/m <sup>3</sup>	STEL: 2 mg/m <sup>3</sup>	TWA: 2 mg/m <sup>3</sup>	-

Chemical Name	Norway	United Kingdom	Australia	Austria	Belgium
Manganese dioxide (CAS #: 1313-13-9)	TWA: 1 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup> STEL: 1 ppm STEL: 0.1 mg/m <sup>3</sup>	TWA: 0.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	STEL 2 mg/m <sup>3</sup> TWA: 0.5 mg/m <sup>3</sup>	-
Potassium hydroxide (CAS #: 1310-58-3)	Ceiling: 2 mg/m <sup>3</sup>	STEL: 2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup> Peak	TWA: 2 mg/m <sup>3</sup>	-
Polyvinyl chloride (CAS #: 9002-86-2)	-	-	-	STEL 10 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	-
Graphite (CAS #: 7782-42-5)	TWA: 5 mg/m <sup>3</sup> TWA: 2 mg/m <sup>3</sup> TWA: 10 mg/m <sup>3</sup> TWA: 4 mg/m <sup>3</sup>	-	3 mg/m <sup>3</sup>	STEL 10 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	-

	STEL: 5 mg/m <sup>3</sup> STEL: 2 mg/m <sup>3</sup> STEL: 10 mg/m <sup>3</sup> STEL: 4 mg/m <sup>3</sup>				
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**Appropriate engineering controls**

Ensure adequate ventilation, especially in confined areas. Remove all sources of ignition.

**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	No special technical protective measures are necessary.
Eye/face protection	Avoid contact with eyes.
Skin and body protection	No special technical protective measures are necessary.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Information on basic physical and chemical properties**

Appearance	Solid
Color	No information available
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 flammable
Flammability Limit in Air	Not applicable
Vapor Pressure	Not determined
Vapor density	Not applicable
Density	Not determined
Partition coefficient (LogPow)	Not determined
Autoignition temperature	Not applicable
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**

Carbon oxides (CO<sub>x</sub>), metal oxides.

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

Inhalation	Not an expected route of exposure
Eye contact	No known effect based on information supplied
Skin Contact	No known effect based on information supplied
Ingestion	Not an expected route of exposure

**Information on toxicological effects****Acute toxicity**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Iron (CAS #: 7439-89-6)	98.6 g/kg bw (rat)	-	-
Manganese dioxide (CAS #: 1313-13-9)	>3480 mg/kg ( Rat ) male	-	-
Potassium hydroxide (CAS #: 1310-58-3)	= 333 mg/kg (Rat)	-	-
Graphite (CAS #: 7782-42-5)	> 2000 mg/kg (rat)	-	> 2000 mg/m <sup>3</sup> /4h (rat)
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
Polyvinyl chloride (CAS #: 9002-86-2)	-	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
Iron (CAS #: 7439-89-6)	-	13.6: 96 h Morone saxatilis mg/L LC50 static	> 100 mg/L/48h (Daphnia magna)
Manganese dioxide (CAS #: 1313-13-9)	> 100 other: v/v saturated solution 72h Desmodesmus subspicatus	> 100 other: % v/v saturated solution 96h Oncorhynchus mykiss	> 100 other: % v/v saturated solution 48h Daphnia magna
Zinc (CAS #: 7440-66-6)	-	LC50 - Daphnia magna (Water flea) - 0.068 mg/l - 48 h	LC50 - Daphnia magna (Water flea) - 0.068 mg/l - 48 h
Potassium hydroxide (CAS #: 1310-58-3)	-	80mg/L/96h Gambusia affinis static	-
Graphite (CAS #: 7782-42-5)	> 100 mg/l/72h (Pseudokirchneriella subcapitata)	> 100 mg/l/96h (Danio rerio)	> 100 mg/l/48h (Daphnia magna)

### Persistence and degradability

No information available.

### Bioaccumulative potential

Chemical Name	Partition coefficient (LogPow)
Manganese dioxide (CAS #: 1313-13-9)	<0
Potassium hydroxide (CAS #: 1310-58-3)	0.65 - 0.83

Chemical Name	Bioconcentration factor (BCF)
Zinc (CAS #: 7440-66-6)	466

### 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
Zinc 7440-66-6	Ignitable powder Toxic
Potassium hydroxide 1310-58-3	Toxic Corrosive

## 14. TRANSPORT INFORMATION

UN/ID No. Not regulated  
 UN Proper shipping name Not regulated  
 Hazard Class Not regulated  
 Packing Group Not regulated  
 Special precautions No information available  
 Marine pollutant Non-marine pollutant

## 15. REGULATORY INFORMATION

**International Inventories**

Component	AICS	DSL/NDSL	EINECS/ELI NCS	ENCS	IECSC	KECL	PICCS	TSCA
Iron 7439-89-6 ( 48 - 52 )	X	X	X	Exempt	X	X	X	X
Manganese dioxide 1313-13-9 ( 25 - 27 )	X	X	X	X	X	X	X	X
Zinc 7440-66-6 ( 8 - 10 )	X	X	X	Exempt	X	X	X	X
Water 7732-18-5 ( 3 - 5 )	X	X	X	Exempt	X	X	X	X
Potassium hydroxide 1310-58-3 ( 2 - 4 )	X	X	X	X	X	X	X	X
Polyvinyl chloride 9002-86-2 ( 1 - 3 )	X	X	X	X	X	X	X	X
Nylon-66 32131-17-2 ( 1 - 2 )	X	X	-	X	X	X	X	X
Graphite 7782-42-5 ( 1 - 2 )	X	X	X	Exempt	X	X	X	X
Polyethylene 9002-88-4 ( 0.1 - 1 )	X	X	-	X	X	X	X	X

"-" Not Listed

"X" Listed

**US Federal Regulations**

**SARA 313**

Chemical Name	SARA 313 - Threshold Values %
Manganese dioxide - 1313-13-9	1.0
Zinc - 7440-66-6	1.0

**SARA 311/312 Hazard Categories**

Not applicable

**CWA (Clean Water Act)**

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Zinc 7440-66-6	-	X	X	-
Potassium hydroxide 1310-58-3	1000 lb	-	-	X

**CERCLA**

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Zinc 7440-66-6	1000 lb	-	RQ 454 kg final RQ RQ 1000 lb final RQ
Potassium hydroxide 1310-58-3	1000 lb	-	RQ 1000 lb final RQ RQ 454 kg final RQ

**US State Regulations**

**California Proposition 65**

This product does not contain any Proposition 65 chemicals

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

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Manganese dioxide 1313-13-9	X	-	X
Zinc 7440-66-6	X	X	X

Potassium hydroxide 1310-58-3	X	X	X
Polyvinyl chloride 9002-86-2	X	-	-
Graphite 7782-42-5	X	X	-

## 16. OTHER INFORMATION

### Revision Note

Issue Date	17-Mar-2016
Revision date	17-Mar-2016
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 -----