

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: NI-MH Battery

Revision date: 26-Mar-2018  
Printing date: 26-Mar-2018

## 1. Identification

### *(a) Product identifier*

Product name: NI-MH Battery

### *(b) Other means of identification*

Product description: Model: AAA300mAh  
Nominal Voltage:1.2V  
Weight: 8.0g  
Dimension: 45.0mm×10.5mm (T×D)

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

Recommended use: Ni-MH Battery.  
Restriction on use: No information available.

### *(d) Details of the supplier of the product*

Company name(China) DONGGUAN GOLDEN CEL BATTERY CO., LTD  
Address: No.11, Yinhu Industrial park, JiaoYiTang Management Zone, TangXia, DongGuan, GuangDong, China  
E-mail: 244547408@qq.com  
Telephone: +86-18813387614

### *(e) Emergency phone number*

+86-18813387614

## 2. Hazard(s) identification

### *(a) Classification of the chemical*

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 2
Skin sensitization	Category 1
Respiratory sensitization	Category 1
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1

### *(b) GHS Label elements, including precautionary statements*

#### Emergency Overview

Signal word

Danger

#### Hazard Statements

Harmful if swallowed

Causes skin irritation

May cause an allergic skin reaction

May cause allergy or asthma symptoms or breathing difficulties if inhaled

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: NI-MH Battery

Revision date: 26-Mar-2018  
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Causes serious eye damage  
May cause cancer  
Causes damage to organs through prolonged or repeated exposure



This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold. Intended use of the product should not result in exposure to the chemical substance This is a battery. In case of rupture: the above hazards exist.

### **Precautionary Statements – Prevention**

Obtain special instructions before use  
Do not handle until all safety precautions have been read and understood  
Use personal protective equipment as required  
Wash face, hands and any exposed skin thoroughly after handling  
Do not eat, drink or smoke when using this product  
In case of inadequate ventilation wear respiratory protection  
Contaminated work clothing should not be allowed out of the workplace  
Wear protective gloves  
Do not breathe dust/fume/gas/mist/vapors/spray

### **Precautionary Statements – Response**

Specific measures (see .? on this label)  
IF exposed or concerned: Get medical advice/attention  
Specific treatment (see supplemental first aid instructions on this label)

### **Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
Immediately call a POISON CENTER or doctor/physician

### **Skin**

IF ON SKIN: Wash with plenty of soap and water  
Take off contaminated clothing and wash before reuse  
If skin irritation or rash occurs: Get medical advice/attention

### **Inhalation**

IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing  
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician

**Ingestion:** IF SWALLOWED: Call a POISON CENTER or doctor/physician.

if you feel unwell, Rinse mouth. Don't induce vomiting

**Precautionary Statements – Storage:** Store locked up

**Precautionary Statements – Disposal:** Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC):** Not applicable

*(c) Other information*

# Safety Data Sheet

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Version: 1.0/EN  
Product name: NI-MH Battery

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Very toxic to aquatic life with long lasting effects;  
Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

**(d) Interactions with Other Chemicals**

Use of alcoholic beverages may enhance toxic effects.

### 3. Composition/information on ingredients

(a) Mixtures information

Chemical name	CAS No.	Concentration%
Nickel(powder)	7440-02-0	30.8
Nickel Hydroxide	12054-48-7	25.6
Cobalt	7440-48-4	9.5
Manganese	7439-96-5	4.3
Lanthanum	7439-91-0	12.5
Cerium	7440-45-1	13.4
Neodymium	7440-00-8	0.5
Potassium Hydroxide	1310-58-3	1.7
Sodium Hydroxide	1310-73-2	0.9
Lithium Hydroxide	1310-65-2	0.8

### 4. First-aid measures

**(a) Description of first aid measures**

**General Advice** First aid is upon rupture of sealed battery. Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

**Eye contact:** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Seek immediate medical attention/advice.

**Skin contact:** Wash off immediately with soap and plenty of water for at least 15 minutes. May cause an allergic skin reaction. In the case of skin irritation or allergic reactions see a physician.

**Inhalation:** Remove to fresh air. Get medical attention immediately if symptoms occur. May cause allergic respiratory reaction. If breathing has stopped, give artificial respiration. Get medical attention immediately. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

**Ingestion:** Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. May produce an allergic reaction. If an allergic reaction occurs, stop use and seek medical help right away. Call a physician or poison control center immediately.

**Self-protection of the first aider:** Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear personal protective clothing (see section 8). Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

**(b) Most important symptoms/effects, acute and delayed**

**Most important symptoms and** Burning sensation. Itching. Rashes. Hives. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Coughing and/ or wheezing

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: NI-MH Battery

Revision date: 26-Mar-2018  
Printing date: 26-Mar-2018

effects

**(c) Indication of any immediate medical attention and special treatment needed**

Notes to Physician     May cause sensitization of susceptible persons. Treat symptomatically.

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## 5. Fire-fighting measures

**(a) Extinguishing media**

Suitable extinguishing media:                     Use foam, dry powder or dry sand, CO<sub>2</sub> as appropriate.

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, CO<sub>2</sub>, 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.

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## 6. Accidental release measures

**(a) Personal precautions, protective equipment and emergency procedures**

Personal Precautions                                 Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Other Information                                      Refer to protective measures listed in Sections 7 and 8.

**(b) Environmental Precautions**

Environmental Precautions                         Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

**(c) Methods and materials for containment and cleaning up**

Methods for Containment                             Prevent further leakage or spillage if safe to do so.

Methods for cleaning up                              Pick up and transfer to properly labeled containers.

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## 7. Handling and storage

**(a) Precautions for safe handling**

In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment.

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: NI-MH Battery

Revision date: 26-Mar-2018  
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## (b) Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up. Keep out of the reach of children.

Incompatible Products Strong acids. Strong oxidizing agents. Strong bases.

## 8. Exposure controls/personal protection

### (a) Control parameters

#### Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Nickel hydroxide 12054-48-7	TWA: 0.2 mg/m3 Ni inhalable fraction	TWA: 1 mg/m3 Ni (vacated) TWA: 1 mg/m3 Ni	IDLH: 10 mg/m3 Ni TWA: 0.015 mg/m3 except Nickel carbonyl Ni
Cobalt 7440-48-4	TWA: 0.02 mg/m3	TWA: 0.1 mg/m3 dust and fume (vacated) TWA: 0.05 mg/m3 dust and fume	IDLH: 20 mg/m3 dust and fume TWA: 0.05 mg/m3 dust and fume
Sodium hydroxide 1310-73-2	Ceiling: 2 mg/m3	TWA: 2 mg/m3 (vacated) Ceiling: 2 mg/m3	IDLH: 10 mg/m3 Ceiling: 2 mg/m3
Nickel 7440-02-0	TWA: 1.5 mg/m3	TWA: 1 mg/m3 (vacated) TWA: 1 mg/m3	IDLH: 10 mg/m3 TWA: 0.015 mg/m3
Potassium hydroxide 1310-58-3	Ceiling: 2 mg/m3	(vacated) Ceiling: 2 mg/m3	Ceiling: 2 mg/m3
Manganese 7439-96-5	TWA: 0.02 mg/m3 respirable fraction TWA: 0.1 mg/m3 inhalable fraction TWA: 0.02 mg/m3 Mn TWA: 0.1 mg/m3 Mn	(vacated) TWA: 1 mg/m3 fume (vacated) STEL: 3 mg/m3 fume (vacated) Ceiling: 5 mg/m3 Ceiling: 5 mg/m3 fume Ceiling: 5 mg/m3 Mn	IDLH: 500 mg/m3 TWA: 1 mg/m3 fume STEL: 3 mg/m3

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value

OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits Immediately Dangerous to Life or Health

Other Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992) See section 15 for national exposure control parameters

### (b) Appropriate engineering controls

Engineering Measures Showers  
Eyewash stations  
Ventilation systems

### (c) Individual protection measures, such as personal protective equipment

Eye/Face Protection Face protection shield.

Skin and Body Protection Wear protective gloves and protective clothing. Long sleeved clothing. Chemical resistant apron. Impervious gloves.

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According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: NI-MH Battery

Revision date: 26-Mar-2018  
Printing date: 26-Mar-2018

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Respiratory Protection	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product.

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## 9. Physical and chemical properties

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(a) Appearance	solid
(b) Odor	Odorless
(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	Not available.
(q) Decomposition temperature	Not available.
(r) Viscosity	Not available.

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## 10. Stability and reactivity

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### **(a) Reactivity**

No data available.

### **(b) Chemical stability**

Stable under recommended storage conditions.

### **(c) Possibility of hazardous reactions**

None under normal processing.

### **(d) Conditions to avoid**

None known based on information supplied.

### **(e) Incompatible materials**

Strong acids. Strong oxidizing agents. Strong bases.

# Safety Data Sheet

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Version: 1.0/EN  
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## (f) Hazardous decomposition products

Carbon oxides.

## 11. Toxicological information

### (a) Information on the likely routes of exposure

#### Product Information

Product does not present an acute toxicity hazard based on known or supplied information.

In case of rupture:

Inhalation:

Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract. May cause sensitization of susceptible persons. (based on components)

Ingestion:

Specific test data for the substance or mixture is not available. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May be harmful if swallowed. (based on components). May cause additional affects as listed under "Inhalation".

Skin contact:

Specific test data for the substance or mixture is not available. Expected to be an irritant based on components. Irritating to skin. Prolonged contact may cause redness and irritation. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. (based on components).

Eye contact:

Specific test data for the substance or mixture is not available. Expected to be an irritant based on components. Severely irritating to eyes. Causes serious eye damage. May cause burns. May cause irreversible damage to eyes.

#### Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Nickel hydroxide 12054-48-7			= 1200 mg/m <sup>3</sup> ( Rat ) 4 h
Nickel 7440-02-0	> 9000 mg/kg ( Rat )		
Cobalt 7440-48-4	= 6170 mg/kg ( Rat )		> 10 mg/L ( Rat ) 1 h
Sodium hydroxide 1310-73-2		= 1350 mg/kg ( Rabbit )	
Potassium hydroxide 1310-58-3	= 214 mg/kg ( Rat )		

### (b) Information on toxicological characteristics

#### Symptoms

Erythema (skin redness). May cause redness and tearing of the eyes. May cause blindness. Burning. Itching. Rashes. Hives. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Coughing and/ or wheezing.

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Version: 1.0/EN  
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## **(C) Delayed and immediate effects as well as chronic effects from short and long-term exposure**

Sensitization May cause sensitization of susceptible persons. May cause sensitization by skin contact. May cause sensitization by inhalation.

Mutagenic Effects No information available.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Nickel hydroxide 12054-48-7	A1	Group 1	Known	X
Nickel 7440-02-0		Group 2B	Reasonably Anticipated	X
Cobalt 7440-48-4	A3	Group 2A Group 2B		X

### **ACGIH (American Conference of Governmental Industrial Hygienists)**

A1 - Known Human Carcinogen

A3 - Animal Carcinogen

### **IARC (International Agency for Research on Cancer)**

Group 1 - Carcinogenic to Humans

Group 2A - Probably Carcinogenic to Humans

Group 2B - Possibly Carcinogenic to Humans

### **NTP (National Toxicology Program)**

Known - Known Carcinogen

Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

### **OSHA (Occupational Safety and Health Administration of the US Department of Labor)**

X - Present

Reproductive Toxicity No information available

STOT - single exposure No information available

STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).

Chronic Toxicity No known effect based on information supplied. Prolonged exposure may cause chronic effects. Repeated contact may cause allergic reactions in very susceptible persons. Contains a known or suspected mutagen. Possible risk of irreversible effects. Contains a known or suspected carcinogen. Contains a known or suspected reproductive toxin. Avoid repeated exposure. May cause adverse effects on the bone marrow and blood-forming system.

Target Organ Effects Respiratory system. Eyes. Skin. May affect the genetic material in germ cells (sperm and eggs). Gastrointestinal tract (GI). Reproductive System. Blood. Central Nervous System (CNS). Kidney. Lungs. Nasal cavities.

Aspiration Hazard No information available.



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## 12. Ecological information

### (a) Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia (Water Flea)	Magna
Nickel 7440-02-0	72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	96h LC50: > 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio)		48h EC50: > 100 mg/L 48h EC50: = 1 mg/L	
Cobalt 7440-48-4		96h LC50: > 100 mg/L (Brachydanio rerio)			
Sodium hydroxide 1310-73-2		96h LC50: = 45.4 mg/L (Oncorhynchus mykiss)			
Potassium hydroxide 1310-58-3		96h LC50: = 80 mg/L (Gambusia affinis)			

### (b) Persistence and Degradability

No information available.

### (c) Bioaccumulative potential

No information available.

### (d) Other adverse effects

No information available.

## 13. Disposal considerations

### (a) Waste treatment methods

Disposal methods This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging Dispose of contents/containers in accordance with local regulations

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Nickel 7440-02-0	(hazardous constituent - no waste number)	Included in waste streams: F006, F039		
Nickel hydroxide 12054-48-7	(hazardous constituent - no waste number)			

California Hazardous Waste Codes 141

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

Chemical Name	California Hazardous Waste
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# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: NI-MH Battery

Revision date: 26-Mar-2018  
Printing date: 26-Mar-2018

Cobalt 7440-48-4	Toxic powder Ignitable powder
Nickel 7440-02-0	Toxic powder Ignitable powder
Sodium hydroxide 1310-73-2	Toxic Corrosive
Potassium hydroxide 1310-58-3	Toxic Corrosive
Manganese 7439-96-5	Ignitable powder

## 14. Transport information

<b>DOT</b>	NOT REGULATED
<b>Proper Shipping Name</b>	NON REGULATED
<b>Hazard Class</b>	N/A
<b>TDG</b>	Not regulated
<b>MEX</b>	Not regulated
<b>ICAO</b>	Not regulated
<b>IATA</b>	Not regulated
<b>Proper Shipping Name</b>	NON REGULATED
<b>Hazard Class</b>	N/A
<b>IMDG/IMO</b>	Not regulated
<b>Hazard Class</b>	N/A
<b>Marine Pollutant</b>	Product is a marine pollutant according to the criteria set by IMDG/IMO
<b>RID</b>	Not regulated
<b>ADR</b>	Not regulated
<b>ADN</b>	Not regulated

## 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
7440-02-0	Listed	Listed	Listed	Listed	Listed	Listed
12054-48-7	Listed	Not listed	Listed	Listed	Listed	Listed
7440-48-4	Listed	Listed	Listed	Listed	Listed	Listed
7439-96-5	Listed	Not listed	Listed	Listed	Listed	Listed
7439-91-0	Listed	Listed	Not listed	Listed	Listed	Not listed
7440-45-1	Listed	Not listed	Listed	Listed	Listed	Not listed
7440-00-8	Listed	Listed	Listed	Listed	Listed	Not listed
1310-58-3	Listed	Listed	Listed	Listed	Listed	Not listed
1310-73-2	Listed	Listed	Listed	Listed	Listed	Listed
1310-65-2	Listed	Listed	Listed	Listed	Listed	Listed

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: NI-MH Battery

Revision date: 26-Mar-2018  
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## 16. Other information, including date of preparation or last revision

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### *(a) Preparation and revision information*

Date of previous revision: Not applicable.

Date of this revision: 26-Mar-2018

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 (SDS)

The content and format of this SDS is accordant with 29 CFR 1910.1200 (OSHA standard)

### 1. Identification of the substance/preparation and of the company/undertaking

**Product details:**

**Product name:** Ni-MH rechargeable battery (AA300mAh AA400mAh AA450mAh AA600mAh AA800mAh AA1000mAh AA1200mAh AA1600mAh AA1800mAh AAA300mAh AAA400mAh AAA450mAh AAA600mAh 2-3AAA300mAh)

**Recommended use of the chemical and restrictions on use:** Power supply. Restrictions on use: Do NOT use it in an application which may contaminate food or do harm to human health.

**Manufacturer/Supplier:** XINXIANG JINHONG COMMERCIAL AND TRADE CO., LTD.

Address: Da kuai Village, Da kuan Towan, Feng quan District, Xinxiang City, Henan Province, China

Tel.: +86-0373-5412588

Fax: +86-0373-5412588

Email: lebin\_wang@126.com

**Further information obtainable from:** XINXIANG JINHONG COMMERCIAL AND TRADE CO., LTD.

**Information in case of emergency:** Tel.: +86-0373-5412588

### 2. Hazards identification

**GHS classification** (for contact with leakage from rupture):

Physical hazards:	Not classified	
Health hazards:	Skin corrosion/irritation	Category 2
	Sensitization, skin	Category 1
	Sensitization, respiratory	Category 1
	Germ cell mutagenicity	Category 2
	Carcinogenicity	Category 1
	Reproductive toxicity	Category 1
	Specific target organ toxicity, repeated exposure	Category 1 (respiratory)
Environmental hazards:	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1

**Signal Word:** Danger

**Symbol:**



*Note: This product is generally not hazardous under normal conditions. But like any sealed container, battery may rupture when exposed to excessive heat and this could result in the release of hazardous materials. The information below is given to minimize any possible hazard during handling, storage and disposal.*

**Hazard Statements** (for contact with leakage from rupture):

- H315: Causes skin irritation.
- H317: May cause an allergic skin reaction.
- H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H341: Suspected of causing genetic defects.
- H350: May cause cancer.
- H360: May damage fertility or the unborn child.
- H372: Causes damage to organs (respiratory) through prolonged or repeated exposure.
- H400: Very toxic to aquatic life.
- H410: Very toxic to aquatic life with long lasting effects.

**Precautionary Statements** (for contact with leakage from rupture):

- P201: Obtain special instructions before use.
- P202: Do not handle until all safety precautions have been read and understood.
- P260: Do not breathe dust/fume.
- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P272: Contaminated work clothing should not be allowed out of the workplace.
- P273: Avoid release to the environment.
- P280: Wear protective gloves.
- P281: Use personal protective equipment as required.
- P285: In case of inadequate ventilation wear respiratory protection.

**Response Precautionary Statements** (for contact with leakage from rupture):

- P302 + P352: IF ON SKIN: Wash with plenty of water.
- P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
- P362: Take off contaminated clothing and wash before reuse.
- P304 + P341: IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P342 + P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- P308 + P313: IF exposed or concerned: Get medical advice/attention.
- P314: Get medical advice/attention if you feel unwell.
- P391: Collect spillage.

**Storage precautionary statements:**

- P405: Store locked up.

**Disposal precautionary statements:**

- P501: Dispose of contents/container according to relevant local and national regulations.

**3. Composition/information on ingredients**

**Product description:** substance ( ); preparation/mixture (√)

Ingredient (s)	CAS No.	EC No.	% by weight
Nickel hydroxide	12054-48-7	235-008-5	56.5%
Nickel (powder)	7440-02-0	231-111-4	13.58%

Copper	7440-50-8	231-159-6	10%
Cobalt oxide	1307-96-6	215-154-6	8.5%
Manganese	7439-96-5	231-105-1	4.5%
Cobalt	7440-48-4	231-158-0	4.2%
Aluminum	7429-90-5	231-072-3	1.5%
Iron	7439-89-6	231-096-4	1.2%
Magnesium	7439-95-4	231-104-6	0.02%

#### 4. First aid measures

**Persons using this product should consult a physician or other medical professional if an accident involving this product results in injury. Specific first-aid measures are as follows:** *(for contact with leakage from rupture)*

**Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a doctor/physician if you feel unwell.

**Skin Contact:** Take off contaminated clothes. Wash with soap and water. Wash contaminated clothes before reuse. If skin irritation or rash occurs: Get medical advice/attention.

**Eyes Contact:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation persists: Get medical advice/attention.

**Ingestion:** Rinse mouth. Do not induce vomiting without professional instruction. Call a doctor/physician if you feel unwell.

**Acute effect and delayed effect:** Acute effect: Causes skin irritation. May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Delayed effect: Suspected of causing genetic defects. May cause cancer. May damage fertility or the unborn child. Causes damage to organs (respiratory) through prolonged or repeated exposure.

**Personal protective equipment:** Wear protective gloves/protective clothing/eye protection/face protection when necessary.

**Indication of immediate medical attention and treatment needed, if necessary:** Treat according to symptoms and exposure dose.

#### 5. Fire-fighting measures

**Extinguishing Media:** Use water, dry chemical, dry sand for extinction.

**Unsuitable Extinguishing Media:** High volume water jet. Discharging cylinder shape water from fire hose may lead to spread fire to the surroundings.

**Special hazards arising from the chemical:** Cell may vent when subjected to excessive heat-exposing battery contents.

**Fire Fighting Method (This is for fire caused by other ignition sources):**

For initial fire, use water, dry chemical, dry sand, etc.

For large fire, it is effective to use fire foam, etc. to shut off air supply.

Remove containers from fire area if it can be done without risk.

Cool surrounding facilities, etc. with water spray.

Extinguish fire from upwind, and the fire extinguishing method should be appropriate to the situation in the surroundings.

**Special actions for fire-fighters:** Firefighters must wear self-contained breathing apparatus and full protective equipment.

Check whether the protective equipment is in good condition before use.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** Use proper personal protective equipment as indicated in Section 8.

**Environmental Precautions:** Isolate the spillage and keep proper distance from it. Keep the unrelated persons out of the contaminated area. The confined area should be ventilated adequately before entering it.

### Methods and material for containment and cleaning up:

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.

## 7. Handling and storage

### Precautions for safe handling (for contact with leakage from rupture):

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe dust/fume.

Wash hands thoroughly after handling.

Do not eat, drink or smoke when using this product.

Contaminated work clothing should not be allowed out of the workplace.

Avoid release to the environment.

Wear protective gloves.

Use personal protective equipment as required.

In case of inadequate ventilation wear respiratory protection.

### Conditions for safe storage, including any incompatibilities:

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. The storeroom should be equipped with proper facilities for accidental fire.

**Incompatible substances or mixtures:** No relevant information.

**Packing material:** This product is contained in craft lights.

## 8. Exposure controls/personal protection

### Occupational Exposure Limits: (for contact with leakage from rupture)

Ingredients	OSHA PEL-TWA	ACGIH TLV-TWA
Aluminum (CAS: 7429-90-5)	15 mg/m <sup>3</sup> (Total dust) 5 mg/m <sup>3</sup> (Respirable fraction)	1 mg/m <sup>3</sup> (Respirable fraction)
Copper (CAS: 7440-50-8)	1 mg/m <sup>3</sup> (Dusts and mists)	1 mg/m <sup>3</sup> (Dusts and mists)
Nickel (powder) (CAS: 7440-02-0)	Metal 0.5 mg/m <sup>3</sup> insoluble 0.1 mg/m <sup>3</sup>	1.5 mg/m <sup>3</sup>

### Engineering Control:

Install washer eyes and safety showers near to the handling and storage area.

Shows the location of these facilities, with a clear and prominent warning board.

**Personal Protective Equipment (for workers):**

**Protection of Hands:**

Recommend wearing protective gloves for industrial hygienic purpose.



**Protection of Eyes:**

Not necessary under conditions of normal use. Wear safety glasses when working in a dusty environment or liquid may splash.



**Respiratory Protection:** Not necessary under conditions of normal use. Wear appropriate respirators when vapour or fume is generated from processing.



**Protection of Body:**

Recommend wearing general working clothing.



**General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Avoid contact with eyes and broken skin.

## 9. Physical and chemical properties

General Information	
Form	Battery
Color	No data available
Odor	No data available
Odor threshold	No data available
pH	No data available
Melting point/freezing point	No data available
Initial boiling point and boiling range	Not applicable



<b>Flash point</b>	Not applicable
<b>Evaporation rate</b>	Not applicable
<b>Flammability (solid, gas, etc.)</b>	Non-flammable
<b>Upper/lower flammability or explosive limits</b>	Not applicable
<b>Vapor pressure</b>	Not applicable
<b>Vapor density</b>	Not applicable
<b>Relative density</b>	No data available
<b>Solubility (ies)</b>	Not applicable
<b>Partition coefficient: n-octanol/Water</b>	No data available
<b>Auto-ignition temperature</b>	No data available
<b>Decomposition temperature</b>	No data available
<b>Viscosity</b>	Not applicable

## 10. Stability and reactivity

**Reactivity and Chemical stability:** This product is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**Possibility of hazardous reactions:** If leaked, the electrolyte may react violently with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

**Conditions to Avoid:** Heating, mechanical abuse and electrical abuse.

**Incompatible materials:** If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

**Hazardous decomposition products:** It may release hazardous fume (e.g. Carbon monoxide, carbon dioxide, lithium oxide fumes) from thermal decomposition.

## 11. Toxicological information

**Product Toxicity Data**(for contact with leakage from rupture):

Ingredients (s)	CAS No.	LD <sub>50</sub> / LC <sub>50</sub> (Median lethal dose)
Nickel hydroxide	12054-48-7	Acute toxicity (Oral) LD <sub>50</sub> >200-<2,000 mg/kg (rat) Data source: ECHA Registered substances Acute toxicity(Dermal) LD <sub>50</sub> >2,000mg/kg (rabbit) Data source: ECHA Registered substances Acute toxicity(Inhalation): 1.2mg/L 4h (rat)
Aluminum	7429-90-5	Acute toxicity (Oral) LD <sub>50</sub> >10,000mg/kg (rat) Data source: ECHA Registered substances Acute toxicity(Dermal) LD <sub>50</sub> >2,000mg/kg (rabbit) Data source: ECHA Registered substances
Copper	7440-50-8	Acute toxicity (Oral) LD <sub>50</sub> >2,500mg/kg (rat) Data source: ECHA Registered substances Acute toxicity(Dermal) LD <sub>50</sub> >2,000mg/kg (rabbit) Data source: ECHA Registered substances

Nickel (powder)	7440-02-0	Acute toxicity (Oral) LD <sub>50</sub> >9,000mg/kg (rat) Data source: ECHA Registered substances Acute toxicity(inhalation) LC <sub>50</sub> > 10.2mg/L (rat) Data source: ECHA Registered substances
Classification of the whole product:		Not classified

**Skin corrosion/irritation** Nickel hydroxide (CAS: 12054-48-7): Category 2 (Data source: ECHA Registered substances, EU CLP)

Classification of the whole product: Category 2

**Serious eye damage/eye irritation** No classification for this product.

**Respiratory sensitizer** Nickel hydroxide (CAS: 12054-48-7): Category 1 (Data source: ECHA Registered substances, EU CLP)

Classification of the whole product: Category 1

**Skin sensitizer** Nickel hydroxide (CAS: 12054-48-7): Category 1 (Data source: ECHA Registered substances, EU CLP)

Nickel (CAS: 7440-02-0): Category 1 (Data source: ECHA Registered substances, EU CLP)

Classification of the whole product: Category 1

**Germ cell mutagenicity** Nickel hydroxide (CAS: 12054-48-7): Category 2 (Data source: ECHA Registered substances, EU CLP)

Classification of the whole product: Category 2

**Carcinogenicity** Nickel hydroxide (CAS: 12054-48-7): Category 1 (Data source: ECHA Registered substances, EU CLP)

Nickel (CAS: 7440-02-0): Category 1 (Data source: ECHA Registered substances, EU CLP)

Classification of the whole product: Category 1

**Reproductive Toxicity** Nickel hydroxide (CAS: 12054-48-7): Category 1 (Data source: ECHA Registered substances, EU CLP)

Classification of the whole product: Category 1

**Specific target organ toxicity, single exposure** No classification for this product.

**Specific target organ toxicity, repeated exposure** Nickel hydroxide (CAS: 12054-48-7): Category 1 (Data source: ECHA Registered substances, EU CLP)

Nickel (CAS: 7440-02-0): Category 1 (respiratory) (Data source: ECHA Registered substances, EU CLP)

Classification of the whole product: Category 1 (respiratory)

**Aspiration hazard** No classification for this product.

**Effects on or via lactation:** No classification for this product.

**Aspiration hazard:** No classification for this product.

## 12. Ecological information

**Ecotoxicity** (*for contact with leakage from rupture*): As for the whole product, there is no relevant data. The data shown below is of the ingredient.

Aluminum (CAS: 7429-90-5):

48h-LC<sub>50</sub>: 11.5mg/L, fish

Data source: ECHA Registered substances

Copper (CAS: 7440-50-8):

96h-LC<sub>50</sub>: 0.460mg/L, fish

Nickel hydroxide (CAS: 12054-48-7):

96h-LC<sub>50</sub>: 8mg/L, fish

48h-LC<sub>50</sub>: 1.9mg/L, aquatic invertebrates

7d-EC<sub>10</sub>: 0.078 - 0.12 mg/L, algae (*lemna gibba*)

Aquatic Acute 1

Aquatic Chronic 1

Data source: ECHA Registered substances

Classification of the whole product: Aquatic Acute 1

Aquatic Chronic 1

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No information available.

**Mobility in Soil:** No information available.

**Other adverse effects:** No relevant information.

## 13. Disposal considerations

**Waste treatment methods:**

Minimize the hazard of waste by the methods of neutralization and stabilization.

Any disposal practice must be in compliance with country, local, state, and federal laws and regulations.

After contents are completely removed, dispose of its container at hazardous or special waste collection point.

Paste a label on the container indicating the possible hazards of the waste.

## 14. Transport Information

**DOT/Air-Transportation- IATA/ICAO/Sea-Transportation-IMO/IMDG:**

**.Proper Shipping Name:** Not regulated.

**.Hazard Class:** Not classified.

**.UN Code:** Not regulated.

**.Packing Group:** Not classified.

**.Packing Group Symbol:** Not classified.

**.Marine Pollutant (Yes/No):** No

**.EMS NO.:** Not regulated.

**Special precautions for user:**

Check whether the package is completed or sealed before transporting; make sure no damage of packages and prevent goods

from falling down during transporting; the transport vehicle should be equipped with facilities for fire-fighting and accidental release handling; do NOT transport this product together with incompatible substances; stay away from fire and areas of high temperature during stopovers.

## 15. Regulatory information

### United States:

**Section 355 (extremely hazardous substances):** Not listed.

**SARA 313:** Aluminum (CAS: 7429-90-5) (fume or dust), Copper (CAS: 7440-50-8) and Nickel (CAS: 7440-02-0) are listed in SARA 313 Toxic Release Chemicals.

**Toxic Substances Control Act (TSCA):** All ingredients are listed in the U.S. Toxic Substances Control Act Chemical Substance Inventory List.

### **Clean Water Act:**

Chemical Name	Reportable Quantities	Hazardous Substances	Priority Pollutants	Toxic Pollutants
Nickel hydroxide (CAS: 12054-48-7)	4.54 Kg	Listed	Listed	Listed
Nickel (CAS: 7440-02-0)	Not applicable	Not applicable	Listed	Listed
Copper (CAS: 7440-50-8)	Not applicable	Not applicable	Listed	Listed

### **Carcinogenicity categories:**

Nickel (CAS: 7440-02-0): IARC-2B, NTP-1, CP65.

Nickel hydroxide (CAS: 12054-48-7): ACGIH-A1, IARC-1, NTP-1, CP65

### **Other relevant laws and regulations:**

**Canada Domestic Substances List (DSL):** All ingredients are listed in the Canada DSL.

**Canada Non-domestic Substance List (NDSL):** Not listed.

**Candidate List of Substances of very high concern (SVHC) according to ECHA:** Not listed.

**REACH Regulation Annex XVII Regulation List:** Not listed.

**REACH Regulation Annex XIV Authorization List:** Not listed.

**Germany – WGK:** WGK-3.

### **(EC) 1272/2008 Annex VI Table 3.1:**

Ingredient (s)	CAS No.	EC No. 1272/2008 Classification	
		CLASS. CODE	HAZARD CODE
Nickel	7440-02-0	Carc. 2 STOT RE 1 Skin Sens. 1	H351 H372 ** H317
Nickel hydroxide	12054-48-7	Carc. 1A Muta. 2 Repr. 1B Acute Tox. 4 * Acute Tox. 4 * STOT RE 1 Skin Irrit. 2	H350i H341 H360D *** H332 H302 H372 ** H315

		Resp. Sens. 1 Skin Sens. 1 Aquatic Acute 1 Aquatic Chronic 1	H334 H317 H400 H410
Cobalt oxide	1307-96-6	Acute Tox. 4 * Skin Sens. 1 Aquatic Acute 1 Aquatic Chronic 1	H302 H317 H400 H410
Cobalt	7440-48-4	Resp. Sens. 1 Skin Sens. 1 Aquatic Chronic 4	H334 H317 H413

**Chemical Safety Assessment:** A Chemical Safety Assessment has not been carried out.

## 16. Other information

**DISCLAIMER:** Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

### References:

GHS Annex II  
 GHS SDS Instruction  
 ANSI Z400.1/Z129.1-2010  
 OSHA Hazard Communication Standard (HCS) 2012

### Full description of some acronyms:

**CAS-Chemical Abstracts Service**  
**EINECS-European Inventory of Existing Commercial Chemical Substances**  
**IMO-International Maritime Organization**  
**IMDG-International Maritime Dangerous Goods**  
**IATA-International Air Transport Association**  
**ICAO-International Civil Aviation Organization**  
**TSCA-Toxic Substance Control Act**  
**OSHA-Occupational Safety and Health Administration**  
**ACGIH- American Conference of Governmental Industrial Hygienists**

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