

SAFETY DATA SHEET

Revision Number 1

Issuing Date No data available

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

Product identifier

Product Name NI-MH Battery

Other means of identification

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Nickel Metal Hydride (NiMH) Battery
Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name SHENZHEN DELIPOW BATTERY CO.,LTD
Supplier Address Delipow Building 6, Blk.3,Fu'an Industrial City, Zone2, Dayang Road
Fuyong Town. Shenzhen. Guangdong 518103 P.R. China
CN
Supplier Phone Number Phone: +86 0755-27318119
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Supplier Email rd@delipow.com
Emergency telephone number

2. HAZARDS IDENTIFICATION

Classification

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.

Carcinogenicity	Category 2
Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (repeated exposure)	Category 2

GHS Label elements, including precautionary statements

Emergency Overview

Signal word

Warning

Hazard Statements

Harmful if swallowed

Suspected of causing cancer

Causes severe skin burns and eye damage

May cause damage to organs through prolonged or repeated exposure

**Appearance** Green**Physical State** Solid Containing Liquid**Odor** Odorless**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

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

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

Unknown Toxicity**Other information**

No information available

Interactions with Other Chemicals

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Nickel	7440-02-0	14.9
Nickel hydroxide	12054-48-7	23.9
Cobalt(II) oxide	1307-96-6	2.7
Tetrafluoroethylene	116-14-3	0.3
Cobalt	7440-48-4	10
Manganese	7439-96-5	14.3
Copper	7440-50-8	5.4
Steel	12597-69-2	16.9
Polyisoprene	9003-31-0	0.3
Nylon-66	32131-17-2	0.6
Polypropylene	9003-07-0	2
Potassium hydroxide	1310-58-3	1
Sodium hydroxide	1310-73-2	1
Lithium hydroxide	1310-65-2	1.2
Water	7732-18-5	5.5

4. FIRST AID MEASURES

First aid measures

<u>General Advice</u>	First aid is upon rupture of sealed battery.
<u>Eye Contact</u>	Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.
<u>Skin Contact</u>	Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.
<u>Inhalation</u>	Remove to fresh air. If symptoms persist, call a physician.
<u>Ingestion</u>	Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.
<u>Self-protection of the first aider</u>	Use personal protective equipment as required.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects No information available.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically

5. FIRE-FIGHTING MEASURES**Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient

Specific Hazards Arising from the Chemical

No information available.

Uniform Fire Code	Sensitizer: Solid Highly Toxic: Solid
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Hazardous Combustion Products

Carbon Oxides

Explosion Data

Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge No.

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**

Personal Precautions Avoid contact with eyes.

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

Environmental Precautions

Environmental Precautions Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

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

Methods for cleaning up In case of rupture: Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling 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.

Conditions for safe storage, including any incompatibilities

Storage Keep container tightly closed.

Incompatible Products None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Nickel Hydroxide 12054-48-7	TWA: 0.2 mg/m ³ Ni inhalable fraction	TWA: 1 mg/m ³ Ni (vacated) TWA: 1 mg/m ³ Ni	IDLH: 10 mg/m ³ Ni TWA: 0.015 mg/m ³ except Nickel carbonyl Ni
Nickel 7440-02-0	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ TWA: 0.015 mg/m ³
Copper 7440-50-8	TWA: 0.2 mg/m ³ fume TWA: 1 mg/mg/m ³ Cu dust and mist	TWA: 0.1 mg/m ³ fume TWA: 1 mg/m ³ dust and mist (vacated) TWA: 0.1 mg/m ³ Cu dust, fume, mist	IDLH: 100 mg/m ³ dust, fume and mist TWA: 1 mg/m ³ dust and mist TWA: 0.1 mg/m ³ fume
Cobalt(II) oxide 1307-96-6	TWA: 0.02 mg/m ³ Co		
Steel 12597-69-2	STEL: 10 mg/m ³ Zr TWA: 0.05 mg/m ³ Pb TWA: 0.00005 mg/m ³ Be inhalable fraction TWA: 1 mg/m ³ Cu dust and mist TWA: 0.2 mg/m ³ Se TWA: 1 mg/m ³ Y TWA: 5 mg/m ³ Zr TWA: 0.02 mg/m ³ Mn TWA: 0.1 mg/m ³ Mn TWA: 0.5 mg/m ³ Hf S*	TWA: 50 µg/m ³ Pb TWA: 2 µg/m ³ Be TWA: 0.2 mg/m ³ Se TWA: 5 mg/m ³ Zr Action Level: 30 µg/m ³ Pb Poison, See 29 CFR 1910.1025 (vacated) TWA: 2 µg/m ³ Be (vacated) TWA: 0.2 mg/m ³ Se (vacated) TWA: 5 mg/m ³ Zr (vacated) STEL: 25 µg/m ³ 30 min (vacated) STEL: 10 mg/m ³ Zr (vacated) Ceiling: 5 µg/m ³ (vacated) Ceiling: 5 mg/m ³ Ceiling: 5 µg/m ³ Be Ceiling: 5 mg/m ³ Mn	IDLH: 4 mg/m ³ Be IDLH: 100 mg/m ³ Cu dust and mist IDLH: 500 mg/m ³ Mn IDLH: 1 mg/m ³ Se IDLH: 500 mg/m ³ Y IDLH: 25 mg/m ³ Zr IDLH: 100 mg/m ³ Pb IDLH: 10 mg/m ³ Ni IDLH: 50 mg/m ³ Hf Ceiling: 0.05 mg/m ³ V dust and fume 15 min Ceiling: 0.0005 mg/m ³ Be TWA: 1 mg/m ³ Cu dust and mist TWA: 1 mg/m ³ Mn TWA: 0.2 mg/m ³ except Selenium hexafluoride Se TWA: 1 mg/m ³ Y TWA: 5 mg/m ³ except Zirconium tetrachloride Zr TWA: 0.050 mg/m ³ Pb TWA: 0.015 mg/m ³ except Nickel carbonyl Ni TWA: 0.5 mg/m ³ Hf

			STEL: 3 mg/m ³ Mn STEL: 10 mg/m ³ Zr
Potassium hydroxide 1310-58-3	TWA: 2 mg/m ³	(vacated) Ceiling: 2 mg/m ³	Ceiling: 2 mg/m ³
Manganese 7439-96-5	TWA: 0.02 mg/m ³ respirable fraction TWA: 0.1 mg/m ³ inhalable fraction TWA: 0.02 mg/m ³ Mn TWA: 0.1 mg/m ³ Mn	(vacated) TWA: 1 mg/m ³ fume (vacated) STEL: 3 mg/m ³ fume (vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ fume Ceiling: 5 mg/m ³ Mn	IDLH: 500 mg/m ³ TWA: 1 mg/m ³ fume STEL: 3 mg/m ³

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits NIOSH IDLH 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

Appropriate engineering controls

Engineering Measures

Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection

No special protective equipment required.

Skin and Body Protection

No special protective equipment required.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical State

Solid Containing Liquid

Appearance

Green

Odor

Odorless

Color

No information available

Odor Threshold

No information available

Property	Values	Remarks/
pH	No data available	None known
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	No data available	None known
Evaporation Rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		
Upper flammability limit	No data available	
Lower flammability limit	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Specific Gravity	No data available	None known
Water Solubility	No data available	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	0.0001	None known

Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	0.0001	None known
Explosive properties	No data available	None known
Oxidizing Properties	No data available	None known

Other Information

Softening Point	No data available
VOC Content (%)	No data available
Particle Size	No data available
Particle Size Distribution	

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

Excessive heat.

Incompatible materials

None known based on information supplied.

Hazardous Decomposition Products

Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure**Product Information**

Inhalation	Specific test data for the substance or mixture is not available.
Eye Contact	Specific test data for the substance or mixture is not available.
Skin Contact	Specific test data for the substance or mixture is not available.
Ingestion	Specific test data for the substance or mixture is not available.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Nickel hydroxide 12054-48-7	-	-	= 1200 mg/m ³ (Rat) 4h
Manganese 7439-96-5	= 9 gm/kg (Rat)	500 mg/24H Mild	-
Nickel 7440-02-0	> 9000 mg/kg (Rat)	-	-
Potassium hydroxide 1310-58-3	= 214 mg/kg (Rat)	-	-

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization	May cause sensitization of susceptible persons.
Mutagenic Effects	Contains a known or suspected mutagen.

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(II) oxide 1307-96-6	A3	Group 2B		X
Steel 12597-69-2	A1 A3	Group 1 Group 2A Group 2B Group 3	Known Reasonably Anticipated	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 2B - Possibly Carcinogenic to Humans

NTP (National Toxicology Program)

Known - Known 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

No information available.

Chronic Toxicity

Contains a known or suspected carcinogen.

Target Organ Effects

Skin.

Aspiration Hazard

No information available.

Numerical measures of toxicity Product Information

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

The environmental impact of some components of this product have not been fully investigated.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
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
Copper 7440-50-8	96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata) 72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata)	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: = 0.112 mg/L (Poecilia reticulata) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas)		48h EC50: = 0.03 mg/L

Persistence and Degradability

No information available.

Bioaccumulation

No information available

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS**Waste treatment methods****Disposal methods**

Should not be released into the environment.

Contaminated Packaging

Dispose of contents/containers in accordance with local regulations.

US EPA Waste Number

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 hydroxide 12054-48-7	(hazardous constituent - no waste number)			
Nickel 7440-02-0	(hazardous constituent - no waste number)	Included in waste streams: F006, F039		

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
Manganese 7439-96-5	Ignitable powder
Cobalt(II) oxide 1307-96-6	Toxic
Nickel 7440-02-0	Toxic powder Ignitable powder
Copper 7440-50-8	Toxic
Steel 12597-69-2	Toxic

14. TRANSPORT INFORMATION**DOT**

NOT REGULATED

Proper Shipping Name

NON REGULATED

Hazard Class

N/A

Marine Pollutant

This product contains a chemical which is listed as a severe marine pollutant according to DOT

TDG

Not regulated

MEX

Not regulated

CAO

Not regulated

IATA

Not regulated

Proper Shipping Name

Not regulated

Hazard Class

N/A

IMDG/IMO

Not regulated

Hazard Class

N/A

RID

Not regulated

ADR

Not regulated

AND

Not regulated

15. REGULATORY INFORMATION**International Inventories**

TSCA

Complies

DSL All components are listed either on the DSL or NDSL.
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

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	CAS No	Weight-%	SARA 313 - Threshold Values %
Nickel hydroxide - 12054-48-7	12054-48-7	23.9	0.1
Nickel - 7440-02-0	7440-02-0	14.9	0.1
Cobalt(II) oxide - 1307-96-6	1307-96-6	2.7	0.1
Manganese -7439-96-5	7439-96-5	14.3	1.0
Copper - 7440-50-8	7440-50-8	5.4	1.0
Steel - 12597-69-2	12597-69-2	16.9	1.0 0.1

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

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
Nickel hydroxide 12054-48-7		X		X
Nickel 7440-02-0		X	X	
Copper 7440-50-8		X	X	
Steel 12597-69-2		X		

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Nickel hydroxide 12054-48-7	10 lb		RQ 10 lb final RQ RQ 4.54 kg final RQ
Nickel 7440-02-0	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ
Copper 7440-50-8	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Nickel hydroxide - 12054-48-7	Carcinogen
Nickel - 7440-02-0	Carcinogen
Cobalt(II) oxide - 1307-96-6	Carcinogen
Steel - 12597-69-2	Carcinogen Developmental

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Nickel hydroxide 12054-48-7	X	X	X	X	X
Cobalt(II) oxide			X	X	X

1307-96-6					
Manganese 7439-96-5	X	X	X	X	X
Nickel 7440-02-0	X	X	X	X	X
Copper 7440-50-8	X	X	X	X	X
Steel 12597-69-2			X	X	X

International Regulations**Mexico****National occupational exposure limits**

Component	Carcinogen Status	Exposure Limits
Nickel hydroxide 12054-48-7		Mexico: TWA= 0.1 mg/m ³ Mexico: STEL= 0.3 mg/m ³
Manganese 7439-96-5		Mexico: TWA 0.2 mg/m ³ Mexico: TWA 1 mg/m ³ Mexico: STEL 3 mg/m ³
Nickel 7440-02-0		Mexico: TWA 1 mg/m ³
Copper 7440-50-8		Mexico: TWA= 1 mg/m ³ Mexico: TWA= 0.2 mg/m ³ Mexico: STEL= 2 mg/m ³
Steel 12597-69-2	A3 A2	Mexico: TWA 0.15 mg/m ³ Mexico: TWA 0.002 mg/m ³ Mexico: TWA 0.2 mg/m ³ Mexico: TWA 5 mg/m ³ Mexico: STEL 10 mg/m ³

*Mexico - Occupational Exposure Limits - Carcinogens***Canada****WHMIS Hazard Class**

D2A - Very toxic materials

16. OTHER INFORMATION

NFPA Health Hazards 1 Flammability 0 Instability 0 **Physical and Chemical Hazards - Personal Protection X**

MIS Health Hazards 1* Flammability 0 Physical Hazard 0
Chronic Hazard Star Legend * = Chronic Health Hazard

Prepared By SHENZHEN DELIPOW BATTERY CO.,LTD
Revision Date 12-Sep-2015
Revision Note

Disclaimer

The information provided in this 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