

SAFETY DATA SHEET

Regulation (EC) No 1907/2006 (REACH), Annex II
(COMMISSION REGULATION (EU) No 453/2010)

Version 1
Product Name Ni-MH Battery

Issue Date 16-Apr-2015
Revision date 16-Apr-2015

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

Product identifier

Product Name Ni-MH Battery AA 1200mAh
Chemical Name Nickel and Metal Hydride

Other means of identification

Voltage 1.2 V
Watt-Hour 1.44WH
Battery Weight 20g

Recommended use of the chemical and restrictions on use

Recommended Use Power supply
Reference No No information available

Details of the supplier of the safety data sheet

Supplier Guangzhou Great Power Energy & Technology Co., Ltd
Address 922 Xicun Section, Shiliang Road, Shawan, Panyu, Guangzhou, GD, PRC
Postal Code 511483
Phone 0086-20-39196888
FAX 0086-20-39196888
E-mail icni@greatpower.net

Emergency telephone number

+86-20-39196888

2. HAZARDS IDENTIFICATION

GHS Classification

Not classified

Label elements

Symbols/Pictograms None
Signal word None
Hazard Statements Not classified
Precautionary Statements None
Response None
Storage None
Disposal None

Hazards not otherwise classified (HNOC)

Batteries may vent, ignite and produce sparks when subjected to high temperature, when damaged or abused (e.g. mechanical damage), may burn rapidly with flare-burning effect; may ignite other batteries in clothes proximity
This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. Burning batteries may produce toxic hydrogen fluoride gas. Fumes may cause dizziness or suffocation

If the battery is discarded into the environment, the harmful contents inside may be dangerous.

Unknown acute toxicity
No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature	Article	Chemical Name	CAS No.	Weight-%
		Nickel	7440-02-0	32.1
		Cobalt	7440-48-4	6.4
		Manganese	7439-96-5	3.2
		Aluminium	7429-90-5	0.7
		Nickel hydroxide	12054-48-7	29.1
		Flamed Nickel	7440-02-0	11.6
		Polypropylene	9003-07-0	7.1
		Steel	7439-89-6	6.7
		Cobalt(III) oxide	1307-96-6	2.1
		Potassium hydroxide	1310-58-3	0.7
		Nickel powder	7440-02-0	0.2
		Lithium hydroxide	1310-65-2	0.1

4. FIRST AID MEASURES

Description of first aid measures

General advice: No effect under routine handling and use. If exposure to internal materials within cells due to damaged outer metal casing, the following actions are recommended: if potential for exposure to fumes or dusts occurs, remove immediately to fresh air and seek medical attention.

Inhalation: In case of skin contact with contents of battery, flush immediately with water. If irritation persists, get medical help.

Skin Contact: For eye contact, flush with copious amounts of water for 15 minutes. Do not inhale leaked material. If irritation persists, get medical help.

Eye contact: Do not induce vomiting. If the injured is fully conscious, wash mouth out with water, then give 2-4 cups of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Ingestion:

Most important symptoms and effects, both acute and delayed

See Section 11 for more information

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media: Any class of extinguishing medium may be used on the batteries or their packing material.

Unsuitable extinguishing media: No information available.

Specific hazards arising from the chemical

Exposure to temperatures of above 212°F can cause venting of the liquid electrolyte. Internal shorting could also cause venting of the electrolyte. There is potential for exposure to iron, nickel, cobalt, rare earth metals (cerium, lanthanum, neodymium, and praseodymium), manganese, and aluminum fumes during fire; use self-contained breathing apparatus.

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

No action shall be taken involving any personal risk or without suitable training. Review Section 5 and Section 7 sections before proceeding with clean-up. Use proper personal protective equipment as indicated in Section 8. Appropriate ventilation.

Evacuate and ventilate spill area. Remove all sources of ignition or heat. Stop leak if safe to do so. Move containers from spill area. Keep unnecessary and unprotected personnel from entering. Review Section 5 and Section 7 sections before proceeding with clean-up.

Methods and material for containment and cleaning up

Avoid dispersal of spilled material and runoff and contact with soil, water ways, drains and sewers. Remove all sources of ignition or heat. Stop leak if safe to do so. Move containers from spill area. Carefully collect undamaged batteries in a clean, dry and appropriate container for reuse or disposal. If electrolyte leaks or spills, collect all released material in an appropriate container before proper disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Accidental short circuit for a few seconds will not seriously affect the battery. However, this battery is capable of delivering very high short circuit currents. Prolonged short circuits will cause high cell temperatures which can cause skin burns. Sources of short circuits include jumbled batteries in bulk containers, metal jewelry, and metal covered tables or metal belts used for assembly of batteries into devices. If soldering or welding to the battery is required, use of tabbed batteries is recommended. If this cannot be done, consult your Great Power Battery Company representative for proper precautions to prevent seal damage or short circuit.

Do not open battery. The negative electrode material may be pyrophoric. Should an individual cell from a battery become disassembled, spontaneous combustion of the negative electrode is possible. This is much more likely to happen if the electrode is removed from its metal container. Here can be a delay between exposure to air and spontaneous combustion.

Conditions for safe storage, including any incompatibilities

Store in a cool and dry area, but prevent condensation on cell or battery terminals. High temperature may damage the performance of the battery. Protect from physical damage and short circuits. To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery. Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries. Do not stack battery directly on another battery. Do not store batteries on electrically conductive surfaces.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH/IDLH	Denmark	European Union
Nickel hydroxide (CAS # 12054-48-7)	TLV: 0.2 mg/m ³ Ni inhalable fraction	TLV: 1 mg/m ³ Ni (vacated) TLV: 1 mg/m ³ Ni	IDLH: 10 mg/m ³ Ni TLV: 0.015 mg/m ³ (except Nickel carbonyl) Ni	TWA: 0.05 mg/m ³	*

Foamed Nickel (CAS # 340-02-0)	TWA 1.5 mg/m ³ inhalable fraction	TWA 1 mg/m ³ (vacated) TWA 1 mg/m ³	IDLH 10 mg/m ³ IDLH: 10 mg/m ³ Ni TWA 0.015 mg/m ³ TWA 0.015 mg/m ³ except Nickel Carbonyl	TWA: 0.05 mg/m ³	*
Cobalt(II) oxide (CAS # 1307-96-6)	TWA 0.02 mg/m ³ Co		Ni	TWA 0.01 mg/m ³	*
Potassium hydroxide (CAS # 1310-58-3)	Ceiling 2 mg/m ³	(vacated) Ceiling 2 mg/m ³	Ceiling 2 mg/m ³	Ceiling 2 mg/m ³	-
Nickel powder (CAS # 340-02-0)	TWA 1.5 mg/m ³ inhalable fraction	TWA 1 mg/m ³ (vacated) TWA 1 mg/m ³	IDLH 10 mg/m ³ IDLH: 10 mg/m ³ Ni TWA 0.015 mg/m ³ TWA 0.015 mg/m ³ except Nickel carbonyl	TWA: 0.05 mg/m ³ STEL 0.1 mg/m ³	*
Chemical Name	Latvia	France	Finland	Germany	Italy
Nickel hydroxide (CAS # 12054-48-7)	TWA 0.05 mg/m ³	TWA 1 mg/m ³	TWA 0.1 mg/m ³	Skin	*
Foamed Nickel (CAS # 340-02-0)	TWA 0.05 mg/m ³	TWA 1 mg/m ³	TWA 1 mg/m ³ , TWA 0.1 mg/m ³	Skin	*
Cobalt(II) oxide (CAS # 1307-96-6)	TWA 0.5 mg/m ³		TWA 0.02 mg/m ³	Skin	-
Potassium hydroxide (CAS # 1310-58-3)		STEL 2 mg/m ³	STEL 2 mg/m ³ Ceiling 2 mg/m ³		*
Nickel powder (CAS # 340-02-0)	TWA 0.05 mg/m ³	TWA 1 mg/m ³	TWA 1 mg/m ³ , TWA 0.1 mg/m ³	Skin	-
Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
Nickel hydroxide (CAS # 12054-48-7)	TWA 0.25 mg/m ³	TWA 0.2 mg/m ³	TWA 0.2 mg/m ³	TWA 0.05 mg/m ³	*
Foamed Nickel (CAS # 340-02-0)	TWA 0.25 mg/m ³	TWA 1.5 mg/m ³	TWA 1 mg/m ³	TWA 0.5 mg/m ³	*
Cobalt(II) oxide (CAS # 1307-96-6)	TWA 0.02 mg/m ³	TWA 0.02 mg/m ³	TWA 0.02 mg/m ³	Skin	-
Potassium hydroxide (CAS # 1310-58-3)	STEL 1 mg/m ³ TWA 0.5 mg/m ³	Ceiling 2 mg/m ³	STEL 2 mg/m ³	TWA: 0.05 mg/m ³ TWA: 2 mg/m ³	*
Nickel powder (CAS # 340-02-0)	TWA 0.25 mg/m ³	TWA 1.5 mg/m ³	TWA 1 mg/m ³	TWA: 0.5 mg/m ³	*
Chemical Name	Norway	United Kingdom	Australia	Austria	Belgium
Nickel hydroxide (CAS # 12054-48-7)	TWA 0.05 mg/m ³ STEL 0.15 mg/m ³	TWA 0.5 mg/m ³	*		*
Foamed Nickel (CAS # 340-02-0)	TWA 0.05 mg/m ³ TWA 0.5 mg/m ³	STEL 1.5 mg/m ³ TWA 0.5 mg/m ³	1 mg/m ³	*	*
Cobalt(II) oxide (CAS # 1307-96-6)	TWA 0.02 mg/m ³ STEL 0.06 mg/m ³	TWA 0.1 mg/m ³		Skin	*
Potassium hydroxide (CAS # 1310-58-3)	Ceiling 2 mg/m ³	STEL 2 mg/m ³	2 mg/m ³ Peak	TWA 2 mg/m ³	*
Nickel powder (CAS # 340-02-0)	TWA 0.05 mg/m ³ STEL 0.15 mg/m ³	STEL 1.5 mg/m ³ TWA 0.5 mg/m ³	1 mg/m ³	TWA: 0.5 mg/m ³ STEL: 2 mg/m ³	*

Appropriate engineering controls

General room ventilation is sufficient during normal use and handling. Do not install these batteries in sealed, unventilated areas. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Remove jewelry rings, watches and any other metallic objects while working on battery. All tools should insulate to avoid the possibility of shorting connections. DO NOT lay tools on top of the battery. The work area should be equipped with the corresponding species and quantity of fire equipment and leakage emergency equipment.

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

Not necessary under conditions of normal use. Use neoprene or natural rubber gloves if handling an open or leaking battery.

Eye/face protection

Not necessary under conditions of normal use. Wear safety glasses with side shields if handling an open or leaking battery.

Skin and body protection

Under normal condition of use and handling no special protection is required for sealed battery. It is recommended to wear appropriate protective clothing when the battery case is broken.

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)	Not flammable
Flammability Limit in Air	Not applicable
Vapor Pressure	Not determined
Vapor density	Not applicable
Density	Not determined
Relative density	Not determined
Bulk density	Not determined
Specific gravity	Not determined
Water solubility	Insoluble in water
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

When a battery cell is exposed to an external short-circuit, crushed, modification, high temperature, open flames, it will be the cause of heat generation and ignition

Conditions to avoid

Exposed to an external short-circuit, crushed, modification, high temperature, open flames, incompatible materials, direct sunlight and high humidity

Incompatible materials

Conductive materials, water, seawater, strong oxidants, strong acid, strong bases, etc.

Hazardous Decomposition Products

In case of a fire or high temperature, metal oxides and irritating/harmful fumes/smoke may be generated

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation Contents of an open battery can cause respiratory irritation. Hypersensitivity to nickel can cause allergic pulmonary asthma.

Eye contact

Skin Contact

Ingestion

Contents of an open battery can cause severe irritation and chemical burns
 Contents of an open battery can cause skin irritation and/or chemical burns
 Nickel, nickel compounds, cobalt, and cobalt compounds can cause skin sensitization and an allergic contact dermatitis
 Swallowing a battery can be harmful
 Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

Information on toxicological effects

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Nickel hydroxide (CAS # 12054-48-7)	> 9000 mg/kg (Rat)	*	= 1200 mg/m ³ (Rat) 1/4 h
Foamed Nickel (CAS # 7440-02-0)	> 9000 mg/kg	*	*
Polypropylene (CAS # 9003-07-0)	> 5 g/kg	*	*
Steel (CAS # 7439-89-6)	98.6 g/kg bw (rat)	*	*
Potassium hydroxide (CAS # 1310-58-3)	= 333 mg/kg (Rat)	*	*
Nickel powder (CAS # 7440-02-0)	> 9000 mg/kg (Rat)	*	*

Skin corrosion/irritation

No effect under routine handling and use for sealed battery. Exposure to the electrolyte contained inside the battery may result in chemical burns.

Serious eye damage/eye irritation

No effect under routine handling and use for sealed battery. Exposure to the electrolyte contained inside the battery may result in irritation.

Sensitization

No sensitization responses were observed.

Germ cell mutagenicity

No information available

Carcinogenicity

Chemical Name	ACGIH	IARC	NTP	OSHA

Nickel hydroxide (CAS # 12054-48-7)	A1	Group 1	Known	X
Flame Retardant Nickel (CAS # 7440-02-0)	-	Group 2B	Known	X
Suboxide (CAS # 1307-96-6)	A3	Group 2B	Reasonably Anticipated	X
Nickel powder (CAS # 7440-02-0)	-	Group 2B	Reasonably Anticipated	X

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
Flame Retardant Nickel (CAS # 7440-02-0)	0.18 mg/L/72h Pseudokirchneriella subcapitata 0.174 - 0.311 mg/L/96h Pseudokirchneriella subcapitata static	100 mg/L/96h Brachydanio rerio 1.3 mg/L/96h Cyprinus carpio semi-static 10.4 mg/L/96h Cyprinus carpio static	100 mg/L/48h Daphnia magna 1 mg/L/48h Daphnia magna Static
Steel (CAS # 7439-89-6)	-	-	> 100 mg/L/48h (Daphnia magna)
Potassium hydroxide (CAS # 1310-58-3)	-	80mg/L/96h Gambusia affinis static	-
Nickel powder (CAS # 7440-02-0)	-	15.3 mg/L/96h (Oncoerynchus mykiss)	-

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

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging

Contaminated packaging material should be treated equivalent to residual chemical. Clean packaging material should be subjected to waste management schemes (recovery, recycling, reuse) according to local legislation. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Chemical Name	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Foamed Nickel 7440-02-0	RCRA - Basis for Listing Included in waste streams: F006, F039		
Nickel powder 7440-02-0	RCRA - Basis for Listing Included in waste streams: F006, F039		
Chemical Name	California Hazardous Waste Status		
Foamed Nickel 7440-02-0	Toxic powder Ignitable powder		
Cobalt(II) oxide 1307-96-6	Toxic		
Potassium hydroxide 1310-58-3	Toxic Corrosive		
Nickel powder 7440-02-0	Toxic powder Ignitable powder		

14. TRANSPORT INFORMATION

In general, all batteries in all forms of transportation (ground, air, or ocean) must be packaged in a safe and responsible manner. Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and be contained in 'strong outer packaging' that prevents spillage of contents. All original packaging for Great Power Nickel/Metal Hydride batteries has been designed to be compliant with these regulatory concerns.

Great Power Nickel/Metal Hydride batteries (sometimes referred to as 'dry cell' batteries) are not defined as hazardous materials (dangerous goods) under International Air Transport Association (IATA) Dangerous Goods Regulations, International Civil Aviation Organization (ICAO) Technical Instructions and U.S. Department of Transportation (DOT) hazardous materials regulations (49 CFR). Nickel/Metal Hydride batteries are not defined as dangerous goods under the IMDG code. For air and ground transportation, these batteries are not subject to the dangerous goods regulations as they are compliant with the requirements contained in the following special provisions:

DOT

- UN/ID No. Not regulated
- Proper shipping name Not regulated
- Hazard Class Not regulated
- Packing Group Not regulated
- Special precautions Batteries must be separated from each other and prevent movement that could lead to short-circuits. Products must also be packed in strong packaging that can withstand the rigors normal to transportation.
- Marine pollutant Non-marine pollutant

15. REGULATORY INFORMATION

International Inventories

Component	AICS	DSL/NDL	EINECS/ELI/NCS	ENCS	IECSC	KECL	PICCS	TSCA
Nickel hydroxide 12054-48-7 (10-30)	X	X	X	X	X	X	X	X
Foamed Nickel 7440-02-0 (7-13)	X	X	X		X	X	X	X
Polypropylene 9001-07-0 (5-10)	X	X		X	X	X	X	X
Steel 7436-89-6 (3-7)	X	X	X	Expect	X	X	X	X

Cobalt(II) oxide 1307-96-6 (0 1 - 5 1)	X	X	X	X	X	X	X	X	X	X
Potassium hydroxide 1310-58-3 (0 1 -)	X	X	X	X	X	X	X	X	X	X
Nickel powder 7440-02-0 (0 1 -)	X	X	X	X	Expect	X	X	X	X	X
Lithium hydroxide 1310-85-2 (0 1 -)	X	X	X	X	X	X	X	X	X	X

* Not Listed
X = Listed

US Federal Regulations
SARA 313

Chemical Name	SARA 313 - Threshold Values %
Nickel hydroxide - 12054-48-7	0.1
Foamed Nickel - 7440-02-0	0.1
Cobalt(II) oxide - 1307-96-6	0.1
Nickel powder - 7440-02-0	0.1

SARA 311/312 Hazard Categories

CWA (Clean Water Act)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Nickel hydroxide 12054-48-7	-	X	-	X
Foamed Nickel 7440-02-0	-	X	X	-
Potassium hydroxide 1310-58-3	1000 lb	-	-	X
Nickel powder 7440-02-0	-	X	X	-

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Nickel hydroxide 12054-48-7	10 lb	-	RQ 10 lb final RQ
Foamed Nickel 7440-02-0	100 lb	-	RQ 4.54 kg final RQ
Potassium hydroxide 1310-58-3	1000 lb	-	RQ 100 lb final RQ
Nickel powder 7440-02-0	100 lb	-	RQ 45.4 kg final RQ
			RQ 1000 lb final RQ
			RQ 454 kg final RQ
			RQ 100 lb final RQ
			RQ 45.4 kg final RQ

US State Regulations

California Proposition 65

Chemical Name	California Proposition 65
Nickel hydroxide - 12054-48-7	Carcinogen
Foamed Nickel - 7440-02-0	Carcinogen
Cobalt(II) oxide - 1307-96-6	Carcinogen
Nickel powder - 7440-02-0	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Nickel hydroxide 12054-48-7	X	X	X

Foamed Nickel 7440-02-0	X	X	X	X
Cobalt(III) oxide 1307-96-5	X	X	-	X
Phosphorus hydroxide 1310-58-3	X	X	X	X
Nickel powder 7440-02-0	X	X	X	X

16. OTHER INFORMATION

Revision Note

Issue Date 16-Apr-2015
 Revision date 16-Apr-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/NDSL - 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
- ACS - 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 -----