Qidong Benyuan Battery Co. Ltd

MATERIAL SAFETY DATA SHEET

According to ST/SG/AC.10/30/Rev.5（GHS）

Date：Aug/07/2015
Reference No.：BY WI-TE-019 A4

Section 1 – Chemical Product and company Identification

Product details

Trade name:	Rechargeable Ni-MH cylindrical
Product types:	SC1300mAh
Voltage:	1.2V
Electrochemical system:	Nickel metal hydride
Anode (negative electrode):	Metal hydride
Cathode (positive electrode):	Nickel hydroxide

Supplier details

Address:	No.719 Lingfeng Road, Haihong Industrial Park, Qidong Economical Development Zone, Qidong City, Jiangsu, China
Emergency telephone number:	0086-513-85399988

Section 2 – Hazards identification

Emergency overview：N/A
Classification according to GHS
Not a dangerous substance according to GHS.

Label elements
Hazard pictogram(s): No available
Signal word: No available
Hazard statement(s): No available
Precautionary statement(s):
Prevention: No available
Response: No available
Disposal: No available

Environmental hazards: no relevant information.
Important symptoms: See Section 11 for more information.
Emergency overview: In case of accident or if you feel unwell, seek medical advice immediately. See Section 4 for more information.

3、Composition, Information on Ingredients

Chemical characterization: Mixture

Ingredients

Chemical Composition	CAS No.	EC#	Weight(%)
Nickel hydroxide	12054-48-7	235-008-5	25~30%
Cobalt hydroxide	21041-93-0	244-166-4	1~3%
Nickel	7440-02-0	231-853-9	25~35%
Lanthanum	7439-91-0	231-099-0	8~12%
Cerium	7440-45-1	231-154-9	1~3%
Aluminum	7429-90-5	231-072-3	0.3~2%
Manganese	7439-96-5	231-869-6	1~3%
Iron	7439-89-6	231-096-4	10~20%
Copper	7440-50-8	231-159-6	2~7%
Potassium hydroxide	1310-58-3	215-181-3	0.5~5%
Sodium hydroxide	1310-73-2	231-659-4	0.5~5%
Lithium hydroxide	1310-66-3	215-183-4	0~3%
Polypropylene	9003-07-0	-	1~3%
Polyethylene	9002-88-4	200-815-3	0.1~0.3%

Heavy Metals

Chemical Composition	CAS No.	EC#	Contents
Cadmium	7440-43-9	231-152-8	＜20 mg/kg
Lead	7439-92-1	231-100-4	＜40 mg/kg
Mercury	7439-97-6	231-106-7	＜1 mg/kg
Hexavalent Chromium (Cr^{6+})	18540-29-9		＜5 mg/kg

Section 4 - First Aid Measures

Description of first aid measures

General information No special measures required.

After eye contact

Flush the eye gently with plenty of water (at least 15 minutes) . Seek for medical assistance.

After skin contact

Remove contaminated clothing and shoes. Immediately wash with water and soap and rinse thoroughly. Wash clothing and shoes before reuse. If irritation occurs, get medical attention.

After inhalation

Remove victim to fresh area. Administer artificial respiration if breathing is difficult. Seek for medical attention.

After swallowing

Do not induce vomiting. Get medical attention.

Personal protective equipment for first-aid responders:

No further relevant information available.

Most important symptoms/effects, acute and delayed:

No further relevant information available.

Indication of immediate medical attention and special treatment needed:

No further relevant information available.

Section 5 - Fire fighting measures

Suitable extinguishing media:
Use extinguishing agent suitable for local conditions and the surrounding environment.
Such as dry powder, CO_2.
Unsuitable extinguishing media:
No further relevant information available.
Specific Hazards arising from the chemical:
Specific Hazards arising from the substance or mixture
Battery may burst and release hazardous decomposition products when exposed to a fire situation. Batteries contain flammable electrolyte that may vent, ignite and produce sparks when subjected to high temperature(＞150℃(302° F)), when damaged or abused(e.g. mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in clothes proximity.
Specific protective actions for fire-fighters:
Protective equipment: Wear self-contained respirator. Wear fully protective impervious suit.

Section 6 - Accidental release measures

Personal precautions:
Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation
Protective equipment:
No further relevant information available.
Emergency procedures:
Remove ignition sources, evacuate area. Sweep up using a method that does not generate dust. Collect as much of the spilled material as possible, placed the spilled material into a suitable disposal container. Keep spilled material out of sewers, ditches and bodies of water.
Environmental precautions:
Do not allow material to be released to the environment without proper governmental permits.
Methods and materials for containment and cleaning up:
All waste must refer to the United Nations, the national and local regulations for disposal.

Section 7 – Handling and Storage

Guideline for safe handling:
Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types.
Keep batteries away from children.
For devices to be used by children, the battery casing should be protected against unauthorized access.
Unpacked batteries shall not lie about in bulk.
In case of battery charge always replace all batteries by new ones of identical type and brand.
Do not swallow batteries.
Do not throw batteries into water.
Do not throw batteries into fire.
Avoid deep discharge.

Do not short-circuit batteries.
Use recommended charging time and current.

Storage:

Storage preferably at room temperature 20℃. Keep batteries between -20℃ and 35℃ for prolonged storage. When the are close to fully charged, the storage temperature should be between -20℃ and 30℃.
Do not store close to the heating. Avoid direct sunlight.

Storage of large amounts:

If possible, store the batteries in original packing (short circuit protection); a fire alarm is recommended; for automatic fire extinction consider chapter 5"Fire fighting measures".

VCI storage category:

It is recommended to consider the "VCI Guideline for the mixed storage of chemicals" and to handle nickel metal hydride cylindrical cells/batteries according to storage category 11("combustible solids").

Section 8 - Exposure controls/personal protection

Control parameters

CAS No.	ACGIH	NIOSH	OSHA
12054-48-7	TLV-TWA 0.2mg/m^3	N/A	PEL-TWA 1mg/m^3
21041-93-0	TLV-TWA 0.02mg/m^3	N/A	N/A
7440-02-0	TLV-TWA 1.5mg/m^3	RELs-TWA 0.015 mg/m^3	PELs-TWA 1mg/m^3
7439-91-0	N/A	N/A	N/A
7440-45-1	N/A	N/A	N/A
7429-90-5	TLV-TWA 1mg/m^3	RELs-TWA 5 mg/m^3	PELs-TWA 5mg/m^3 PELs-TWA 15mg/m^3
7439-96-5	TLV-TWA 0.1mg/m^3 TLV-TWA 0.02mg/m^3	RELs-TWA 1 mg/m^3 RELs-STEL 3 mg/m^3	PELs-TWA 5mg/m^3 PELs-TWA 15mg/m^3 RELs-Peak 5 mg/m^3
7439-89-6	N/A	N/A	PEL-TWA 5mg/m^3 PEL-TWA 15mg/m^3
1310-58-3	TLV-Peak 2mg/m^3	REL-Peak 2 mg/m^3	N/A
1310-73-2	TLV-Peak 2mg/m^3	REL-Peak 2 mg/m^3	PEL-TWA 2mg/m^3
1310-66-3	N/A	N/A	N/A
7440-50-8	TLV-TWA 0.2mg/m^3 TLV-TWA 1mg/m^3	RELs-TWA 1 mg/m^3	PELs-TWA 5mg/m^3 PELs-TWA 15mg/m^3
9003-07-0	N/A	N/A	N/A
9002-88-4	N/A	N/A	N/A

Appropriate engineering controls:

The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.

Personal Protective Equipment

Respiratory protection:

Wear suitable protective mask in order to reduce the respiratory system. A large number of

leakage, wear chemical protective clothing, including self-contained breathing apparatus.

Hand Protection:

Wear appropriate protective gloves to reduce skin contact.

Eyes Protection:

Wear safety goggle or eye protection combined with respiratory protection.

Skin and Body Protection:

Working environment required, wear suitable protective clothing to minimize contact with skin. The type of protective equipment must be according to the concentration and the content of certain hazardous substances in the workplace.

Section 9 - Physical and Chemical properties

Information on basic physical and chemical properties

General information

Appearance:	**Black.**
Form:	**Prismatic.**
Odour:	**Not available.**
Odour threshold:	**Not available.**
pH:	**Not available.**
Melting point/freezing point:	**Not available.**
Initial boiling point and boiling range:	**Not available.**
Flash point:	**Not available.**
Evaporation rate:	**Not available.**
Flammability (solid, gas):	**Not available.**
Explosion Limits(vol% in air):	**Not available.**
Vapour pressure, kPa at 20℃:	**Not available.**
Vapour density:	**Not available.**
Density/Relative density(water = 1):	**Not available.**
Solubility(ies):	**Not available.**
Auto-ignition temperature:	**Not available.**
Decomposition temperature:	**Not available.**
Viscosity:	**Not available.**

Section 10 - Stability and reactivity

Reactivity: Data not available.

Chemical stability: Stable.

Possibility of hazardous reactions: Data no available.

Conditions to Avoid: Flames, sparks, and other sources of ignition, incompatible materials.

Incompatibilities materials: Oxidizing agents, acid, base.

Hazardous decomposition products: Carbon monoxide, carbon dioxide.

Section 11 - Toxicological information

Acute toxicity:

CAS No.	LC50/LD50
12054-48-7	Oral(rat) LD50: 1500mg/Kg; Inhalation (Rat) LC50: 1200mg/m^3/4h
21041-93-0	Not available.
7440-02-0	Not available.
7439-91-0	Not available.
7440-45-1	Not available.
7429-90-5	Not available.
7439-96-5	Oral(rat) LD50: 9000mg/Kg
7439-89-6	Oral(rat) LD50: 98600mg/Kg
1310-58-3	Oral(rat) LD50: 273mg/Kg
1310-73-2	Not available.
1310-66-3	Not available.
7440-50-8	Oral(rat) LD50: 5800mg/Kg
9003-07-0	Oral(rat) LD50: 3200mg/Kg
9002-88-4	Oral(rat) LD50: ＞3000mg/Kg; Inhalation (Rat) LC50: 12000mg/m^3/30m

Skin irritation/corrosion:
Eye damage/irritation: No further relevant information available.
Respiratory or Skin sensitisation: No further relevant information available.
Reproductive Cell Mutagenicity: No further relevant information available.
Carcinogenicity: No further relevant information available.
Reproductive Toxicity: No further relevant information available.
Specific target organ toxicity-Single exposure: No further relevant information available.
Specific target organ toxicity-Repeated exposure: No further relevant information available.
Aspiration hazard: No further relevant information available.
Potential Health Effects: No further relevant information available.
Inhalation: No further relevant information available.
Skin contact: No further relevant information available.
Eye contact: No further relevant information available.
Ingestion: No further relevant information available.

Section 12 - Ecological information

Benyuan Nickel metal hydride cylindrical cells/batteries do not contain heavy metals as defined by the European directive 2006/66/EC Article 21; they comply with the chemical composition requirements of this Directive.
Mercury has not been “intentionally introduced (as distinguished from mercury that may be incidentally present in other materials)” in the sense of the U.S.A. “Mercury-Containing and Rechargeable Battery Management Act”(May 13 1996).
The Regulation on Mercury Content Limitation for Batteries promulgated on 1997-12-31 by

the China authorities including the State Administration of Light Industry and the State Environment Protection Administration defines 'low mercury' as 'mercury content by weight in battery as less than 0.025%', and 'mercury free' as 'mercury content by weight in battery as less than 0.0001%'. And therefore: Benyuan Nickel metal hydride cylindrical cells/batteries belong to the category of mercury-free battery(mercury content lower than 0.0001%)

Section 13 - Disposal considerations

USA：Nickel metal hydride cylindrical cells/batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials and are accepted for recycling by the Rechargeable Battery Recycling Corporation's (RPBC) Battery Recycling Program. Please go to the RPBC website at www.rbrc.org for additional information.

In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the DIRECTIVE 2006/66/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC. Customers find detailed information on disposal in their specific countries using the web site of the European Portable Batteries Association (http://www.epbaeurope.net/legislation_national.html).

Importers and users outside EU should consider the local law and rules.

In order to avoid short circuit and heating, used nickel metal hydride cylindrical cells/batteries should circuit are:

- Storage of batteries in original packaging
- Coverage of the terminals

Section 14 - Transport information

Benyuan nickel metal hydride cylindrical cells/batteries are considered to be "dry cell" batteries and are unregulated for purposes of transportation by the U.S. Department of Transportation (DOT), International Civil Aviation Administration (ICAO), International Air Transport Association (IATA), the "*Accord Europeen Relatif au Transport International des Marchandises Dangereuses par Route*" (ADR) and the "*Reglement concernant le transport international ferroviaire de marchandises Dangereuses*"(RID).

IATA DGR: Special Provision A123: "*Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries. Any electrical battery ... having the potential of a dangerous evolution of heat must be prepared for transport as to prevent (a) a short-circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals...) is forbidden from transport; and (b) accidental activation. The words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued*."

EU (ADR/RID): Chapter 3.2 Table A: "*Batteries, nickel-metal hydride, UN 3496, not subject to ADR*"

USA: 49 CFR § 172.102 Special Provisions 130 and 340: Nickel metal hydride cylindrical cells/batteries *are not subject to requirements of this subchapter except for the following ... "Batteries and battery-powered device(s) containing batteries must be prepared and packaged for transport in a manner to prevent: (1) A dangerous evolution of heat; (2) Short circuits, including but not limited to the following methods: (i) Packaging each battery or each battery-powered device when practicable, in fully enclosed inner packagings made of non-conductive material; (ii) Separating or packaging batteries in a manner to prevent contact with other batteries, devices or conductive materials (e.g., metal) in the packagings*"...

International Maritime Organization (IMO), IMDG Code: Regulated as "*Batteries, nickel-metal hydride, UN 3496", Special Provision 963: "...nickel-metal hydride cells or batteries shall be securely packed and protected from short circuit. They are not subject to other provisions of this Code provided that they are loaded in a cargo transport unit in a total quantity of less than 100 Kg gross mass. When loaded in a cargo transport unit in a total quantity of 100 Kg gross mass or more, they are not subject to other provisions of this Code except those of 5.4.1, 5.4.3 and column (16) of the dangerous goods list in Chapter 3.2."*

Section 15 - Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

CAS No.	TSCA	IECSC	DSL/NDSL	EINECS/ELINCS/NLP
12054-48-7	listed	listed	Listed DSL	listed
21041-93-0	listed	listed	Listed DSL	listed
7440-02-0	listed	listed	Listed DSL	listed
7439-91-0	listed	listed	Listed DSL	listed
7440-45-1	listed	listed	Listed DSL	listed
7429-90-5	listed	listed	Listed DSL	listed
7439-96-5	listed	listed	Listed DSL	listed
7439-89-6	listed	listed	Listed DSL	listed
1310-58-3	listed	listed	Listed DSL	listed
1310-73-2	listed	listed	Listed DSL	listed
1310-66-3	listed	listed	Listed DSL	listed
7440-50-8	listed	listed	Listed DSL	listed
9003-07-0	listed	listed	Listed DSL	listed
9002-88-4	listed	listed	Listed DSL	listed

Section 16 - Other information

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. Benyuan makes no warranty, expressed or implied,

with respect to this information and disclaims all liabilities from reliance on it.
Other information:
CAS: Chemical Abstracts Service;
EC: European Commission;
ACGIH: American Conference of Governmental Industrial Hygienists;
NIOSH: US National Institute for Occupational Safety and Health;
OSHA: US Occupational Safety and Health;
TLV: Threshold Limit Value;
TWA: Time Weighted Average;
STEL: Short Term Exposure Limit;
PEL: Permissible Exposure Level;
REL: Recommended Exposure Limit;
LC50: Lethal concentration, 50 percent kill;
LD50: Lethal dose, 50 percent kill;
IATA: International Air Transport Association;
IMDG: International Maritime Dangerous Goods;
TSCA: Toxic Substances Control Act of USA;
DSL: the Domestic Substances List of Canada;
NDSL: the Non-domestic Substances List of Canada.

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