中国广州分析测试中心
CHINA NATIONAL ANALYTICAL CENTER, GUANGZHOU

BW20100808-2

Material Safety Data Sheet
Ni-Cd Battery

1. Chemical Product and Manufacturer Identification

Product name	Ni-Cd Battery		
CAS No.	— —		
molecular formula	——	**Molecular mass**	— —
Manufacturer/Supplier	SHENZHEN YDT BATTERY CO.,LTD		
Address	B Building,Meibaotian Industrial Park, Xixiang Street, BaoAn District,Shenzhen,China		
Post code	518000	**Email**	ydt06@163.com
Fax.	0755-27916415	**Company emergency phone**	13798494835
MSDS No.	BW20100808-2	**Valid date**	Feb.26.2012
Emergency phone	119		

2. Hazards Identification

GHS Hazard Class	None. The internal materials of the battery are contained in a hermetically-sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage. However, if exposed to a fire, explosion, extreme abuse, misuse, or improper disposal that results in breaching of the battery cell case, hazardous materials may be released.
Emergency overview	None special measures need.
Routes of entry	Skin, eye contact, inhalation and ingestion.
Health hazards	The internal materials of the battery are contained in a sealed can. Potential for exposure should not exist unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. These could result in the release of toxic or corrosive materials. Skin contact: Irritation and skin burns may occurs following exposure to a leaking battery. Eye contact: Irritation, redness and pain may occurs following exposure to a leaking battery. Inhalation: During normal use inhalation is an unlikely route of exposure due to containment of hazardous materials within the battery case. However, if the batteries is exposed to extreme heat or pressures and causing a breach in the battery case, cadmium dusts and fumes may be emitted. Inhalation of cadmium dusts or fumes may cause throat dryness, respiratory irritation, headache, nausea, vomiting, chest pain, extreme restlessness and irritability, pneumonitis, and bronchopneumonia. Ingestion: If the battery case is breached in the digestive tract, the electrolyte may cause localized burns. Ingestion of cadmium compounds may result in increased salivation, choking, persistent vomiting, diarrhea, abdominal pain, anemia, tenesmus, and kidney dysfunction.
Environment hazards	Cadmium compounds is dangerous for the environment.
Explosion hazards	Explosion may occur when the battery is short circuit or be throwed in fire or exposured to high heat.

3. Composition/Information on Ingredients

Component	Range % by Wt.	CAS No.
Iron	30~40	7439-89-6
Cadmium oxide	15~25	1306-19-0
Nickel hydroxide	15~25	12054-48-7
Nickel	4~8	7440-02-0
Potassium hydroxide	3~6	1310-58-3
Sodium hydroxide	1~3	1310-73-2
Lithium hydroxide	1~3	1310-65-2
Cobalt oxide	1~3	1307-96-6

4. First Aid Measures

Skin contact	None under normal use conditions. Use butyl gloves when handling leaking batteries. Get medical attention if irritation persists.
Eye contact	None under normal use conditions. Wear safety glasses when handling leaking batteries. Get medical attention if irritation persists.
Inhalation	If potential for exposure to cadmium or nickel fumes or dusts occurs, remove immediately to fresh air and seek medical attention.
Ingestion	Do not induce vomiting. Seek medical attention immediately.

5. Fire Fighting Measures

Types of hazard	Not considered to be a fire hazard.
Hazardous combustion products	In fire situations fumes containing cadmium, nickel ,cobalt and iron may evolved, mist containing potassium hydroxide, sodium hydroxide and lithium hydroxide may developed.
Fire-fighting measures	Dry chemical or sand.
Special Information	If possible, remove from fighting area. If too heat, battery may explode. In the event of a fire, wear full protective clothing and self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Sweep up and containerize for reclamation or disposal.

7. Handling and Storage Measures

Handling	Handling carefully. Do not short circuit, over-recharge, over-discharge, force discharge, immerse, puncture or crush the battery.
Storage	Stored in a cool, dry, ventilated area.

8. Exposure Controls / Personal Protection

Occupational exposure limits	For Iron (CAS: 7439-89-6): -OSHA Permissible Exposure Limit (PEL): Iron oxide fume 10 mg/m^3; -ACGIH Threshold Limit Value (TLV): Iron oxide dust and fume (Fe_2O_3) as Fe 5 mg/m^3 (TWA). For Cadmium oxide (CAS: 1306-19-0): -OSHA PEL: 5 ug/m^3 (TWA); -ACGIH TLV: 0.01 mg/m^3 total dust, 0.002 mg/m^3 respirable fraction for cadmium and compounds, as Cd; -China: 0.01mg/m^3(TWA), 0.02 mg/m^3(STEL). For Nickel and Nickel compounds, as Ni: -OSHA PEL: 1 mg/m^3 (TWA); - ACGIH : 1.5 mg/m^3 (TWA) inhalable fraction; -China: 1mg/m^3(TWA) and 2.5mg/m^3(STEL) for metal nickel and insoluble nickel compounds. 0.5 mg/m^3(TWA) and 1.5mg/m^3(STEL) for soluble nickel compounds. For Potassium hydroxide (CAS: 1310-58-3): -OSHA PEL: 2 mg/m^3 (TWA) Ceiling; - ACGIH TLV: 2 mg/m^3 Ceiling; -China: 2mg/m^3(MAC). For Sodium hydroxide (CAS: 1310-73-2): -OSHA PEL: 2 mg/m^3 (TWA) Ceiling; - ACGIH TLV: 2 mg/m^3 Ceiling; -China: 2mg/m^3(MAC). For Lithium hydroxide (CAS: 1310-65-2): - AIHA Workplace Environmental Exposure Limit (WEEL) :1 mg/m^3 as LiOH (One-minute TWA, Ceiling), equivalent to 1.75 mg/m^3 as LiOH-HOH. For Cobalt oxide (CAS: 1307-96-6), -OSHA PEL: 0.1 mg/m^3 (TWA) Cobalt metal dust and fume as Co; -ACGIH TLV: inorganic cobalt compounds 0.02 mg/m^3 (TWA) as Co; -China: 0.05mg/m3(TWA) and 0.1mg/m3(STEL) for cobalt and it's compounds, as Co.
Inspect measures	Atomic absorption spectrometry; MS; Infrared Spectroscopy.
Engineering controls	General ventilation under normal use conditions.
Inhalation protection	Generally protection.
Eye protection	Generally protection.
Skin protection	Generally protection.
Other protection	In the event of leakage, wear chemical apron. Keep batteries away from children.

9. Chemical and Physical Properties

Appearance and odor	Columniform battery.	pH	N/A.
Melting point (℃)	N/A.	Boiling point (℃)	N/A.
Relative density (water=1)	N/A.	Relative vapour density (air=1)	N/A.
Vapour pressure (kPa):	N/A.	Heat of combustion (kJ/mol)	N/A.
Critical temperature (℃)	N/A.	Critical pressure (MPa)	N/A.
Octanol/water partition coefficient as log Pow	N/A.	Flash point (℃)	N/A.
Auto-ignition temperature(℃)	N/A.	Solubility	N/A.

Upper explosive limits %(V/V)	N/A.	Lower explosive limits %(V/V)	N/A.
Main purpose	Electric devices.		
Other properties	No information found.		

10. Stability and Reactivity

Stability	Stable under ordinary conditions of use and storage.
Incompatibilities	Acids, strong oxidizer, water.
Conditions to avoid	High heat or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Short circuit.
Hazardous polymerization	Will not occur.
Hazardous decomposition	Cadmium compounds, nickel compounds, cobalt compounds and caustic liquid may be released if involved in a fire.

11. Toxicological Information

Acute toxicity	For Iron (CAS: 7439-89-6), oral rat LD_{50}: 30 gm/kg. For Cadmium oxide (CAS: 1306-19-0), oral rat LD_{50}: 72 mg/kg. For Nickel hydroxide (CAS: 12054-48-7), oral rat LD_{50}: 1500 mg/kg. For Potassium hydroxide (CAS: 1310-58-3), oral rat LD_{50}: 273 mg/kg. For Sodium hydroxide (CAS: 1310-73-2),draize test, rabbit, eye: 50 ug/24H Severe.draize test, rabbit, skin: 500 mg/24H Severe. For Lithium hydroxide (CAS: 1310-65-2), oral rat LD_{50}: 210 mg/kg. For Cobalt oxide (CAS: 1307-96-6), oral, rat: LD_{50} : 202 mg/kg.
Skin irritation/corrosion	No information.
Eye damage/irritation	No information.
Respiratory or skin sensitization	No information.
Reproductive cell mutagenicity	For cadmium oxide (CAS:1306-19-0), adverse reproductive effects have occurred in experimental animals. Evidence of gonadal effects from cadmium include changes in sperm and prostate cancer.
Carcinogenicity	Cadmium and nickel have been identified by the National Toxicology Program (NTP) as reasonably anticipated to be carcinogens. U.S. EPA classified cadmium as a "B1" probable human carcinogen. The International Agency for Research on Cancer (IARC) recommended that cadmium be listed as a "2A" probable human carcinogen, and the American Conference of Governmental Industrial Hygienists (ACGIH) has proposed listing cadmium as an A2 carcinogen.
Reproductive toxicity	For Cadmium oxide (CAS:1306-19-0), teratogenic effects have occurred in experimental animals.
STOT-single exposure	No information.
STOT-repeated exposure	No information.
Aspiration hazard	No information.
Other toxicity	No information.

12. Ecological Information

Ecological toxicity	Cadmium is toxic, persistent and has a high bioaccumulative potential.

Persistence and degradability	Since a battery and the internal materials remain in the environment, do not bury or throw out into the environment.
Bioaccumulation	Cadmium has a high bioaccumulative potential.
Mobility in soil	Since a battery and the internal materials remain in the environment, do not bury or throw out into the environment.
Others	No information.

13. Disposal Information

Disposal measures	According to regulations of local country or state.
Notes	No information.

14. Transportation Information

UN No.	Not regulated.
Proper Shipping Name	Not regulated.
Hazard Class	Not regulated.
Packing Group	Not regulated.
Marine pollutant(Y/N)	Cadmium oxide(CAS:1306-19-0) is marine pollutant. Other ingredients are not marine pollutant.
Transport in bulk	Not regulated.
Notes	Not regulated.

15. Regulatory Information

Domestic authority regulations:
Regulations on the Safety Administration of Dangerous Chemicals(Jan.26.2002).
The ingredient(lithium metal battery) is listed in GB 12268 and GB 13690.
Abroad regulations:
This battery must be packed in inner packagings in such a manner as to effectively prevent short circuits and accidental activation. It is not restricted according to Special Provisions A123 of IATA DGR if packed as above.
However, its' ingredients are listed in the regulations, as follows.
Iron (CAS: 7439-89-6) is listed in TSCA, DSL, inventory of EC and Australia, but not listed in CERCLA.
Cadmium oxide (CAS: 1306-19-0) is listed in TSCA, DSL, CERCLA and inventory of EC and Australia.
Nickel (CAS: 7440-02-0) is listed in TSCA, DSL, CERCLA and inventory of EC.
Potassium hydroxide (CAS: 1310-58-3) is listed in TSCA, DSL, CERCLA and inventory of EC and Australia.
Sodium hydroxide (CAS: 1310-73-2) is listed in TSCA, DSL, CERCLA and inventory of EC and Australia.
Lithium hydroxide (CAS: 1310-65-2) is listed in TSCA, DSL, inventory of EC and Australia, but not listed in CERCLA.
Cobalt oxide (CAS: 1307-96-6) is listed in TSCA, DSL, inventory of EC and Australia, but not listed in CERCLA.

16. Other Information

Issue date	Feb. 26, 2010
Prepared by	Department of Physical Properties Test, China National Analytical Center, Guangzhou
Checked by	Business Department, China National Analytical Center, Guangzhou
Amendment	——
Other information	——

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