

SAFETY DATA SHEET

Section 1: Identification

Product Name: Nickel Zinc Battery (Cell) Sizes: Sub-C and Prismatic

Chemical Name/Synonyms: None

Identified uses: Power storage

Company: ZincFive (dba PowerGenix in China)

Address: 20170 SW 112th Avenue Tualatin, OR 97062

Telephone: 001 503-399-3517

Emergency Phone number: 001 503-399-3517 (Within USA call 911)

For information about this SDS, use this department contact phone#: 503.399.3517

Section 2: Hazard(s) Identification

2.1 Hazard Classification:

Corrosive to metals (Category 1), H290
Acute toxicity, Oral (Category 4), H302
Skin corrosion (Category 1A), H314
Skin sensitisation (Category 1), H317
Acute toxicity, Inhalation (Category 4), H332
Respiratory sensitisation (Category 1), H334
Germ cell mutagenicity (Category 2), H341
Carcinogenicity, Inhalation (Category 1A), H350i
Reproductive toxicity (Category 1B), H360
Specific target organ toxicity - repeated exposure (Category 1), H372
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (Category 1), H410

2.2 Label elements

Pictograms:



Signal Word(s): Danger

Hazard Statements:

H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341 Suspected of causing genetic defects.
H350i May cause cancer by inhalation.
H360 May damage fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

P201 Obtain special instructions before use.

P261 Avoid breathing dust.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards: Do not dispose of battery in fire- may explode

Section 3: Composition/ Information on Ingredients

MIXTURE: This is a manufactured product that does not fall under a chemical designation.

Component	CAS#	Classification	Conc.
Nickel Hydroxide	12054-48-7	Acute Tox. 4; Skin Irrit. 2; Resp. Sens. 1; Skin Sens. 1; Muta. 2; Carc. 1A; Repr. 1B; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H302, H332, H315, H334, H317, H341, H350i, H360, H372, H400, H410 M-Factor - Aquatic Acute: 10	<20%
Potassium Hydroxide	1310-58-3	Met. Corr. 1; Acute Tox. 4; Skin Corr. 1A; H290, H302, H314	<10%
Lithium Hydroxide	1310-66-3	Acute Tox. 4; Skin Corr. 1B; H302, H314	<1%
Zinc Oxide	1314-13-2	Aquatic Acute 1; Aquatic Chronic 1; H400, H410 M-Factor - Aquatic Acute: 1	<19%
Nickel (Powder)	7440-02-0	Carc. 2; Skin Sens. 1; STOT RE 1; Aquatic Chronic 3; H351, H317, H372, H412 M-Factor - Aquatic Acute: 1	<2%
Cobalt	7740-48-4	Resp. Sens. 1; Skin Sens. 1; Aquatic Chronic 4; H334, H317, H413	<1%
Steel	N/A	N/A	<15%

Section 4: First-Aid Measures
4.1 Description of necessary measures

If inhalation: If liquid vapors are inhaled, provide fresh air and seek medical attention if respiratory irritation develops.

If eye contact: If liquid comes into contact with eyes, wash with copious amounts of water for 15 minutes, and contact a physician.

If skin contact: If liquid leakage occurs and makes contact with skin, flush area with water

immediately.

If Ingestion: Never give anything by mouth to an unconscious person. Consult a physician

4.2 Most important symptoms/effects, acute and delayed.

See section 2 & section 11

4.3 Indication of immediate medical attention and special treatment needed

No data available

Section 5: Fire-Fighting Measures

5.1 Suitable extinguishing media: Carbon Dioxide, Dry Chemical, or Foam extinguishers

5.2 Specific hazards arising from the chemical: Nickel/nickel oxides, Cobalt/cobalt oxides, Zinc/zinc oxides, Lithium oxides, Potassium oxides

5.3 Special protective equipment and precautions for fire-fighters: Wear Protective cloths and a positive pressure Self-Contained Breathing Apparatus (SCBA). if necessary.

Section 6: Accidental Release Measures

6.1 Personal precautions, protective equipment, and emergency procedures: Steps to be taken in case material is released or spilled Batteries that are leaking should be handled with rubber gloves. Avoid Direct contact with liquid. Wear Protective cloths and a positive pressure Self-Contained Breathing Apparatus (SCBA).

6.2 Methods and materials for containment and cleaning up: Discharge into the environment must be avoided

Section 7: Handling and Storage

7.1 Precautions for safe handling: Batteries should be handled and stored carefully to avoid short circuits. NEVER disassemble a battery. Do not breath cell vapors or touch internal material with bare hands.

7.2 Conditions for safe storage, including any incompatibilities: The ingredients are contained in a hermetically sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, hazardous materials are fully contained inside the battery. The battery should not be opened or exposed to heat because exposure to the following ingredients contained within could be harmful under some circumstances. Do not store in disorderly fashion or allow metal objects to be mixed with stored batteries. Keep batteries between -30° and 35°C for prolonged storage.

Section 8: Exposure Controls/Personal Protection

8.1 Control parameters

Chemical Name	OSHA PEL	OSHA PEL (ceiling)	ACGIH OEL (TWA)	ACGIH OEL (STEL)
No data available				

8.2 Appropriate engineering controls: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and after work

8.3 Individual protection measures:

Breathing equipment: Wear a positive pressure Self-Contained Breathing Apparatus (SCBA).

Protection of hands/skin: Handle with gloves, wear protective cloths and use proper glove to avoid skin contact with this product.

Eye protection: Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards

Section 9: Physical and Chemical Properties

Appearance: Cylindrical or Prismatic Shape
Odor: Odorless
Odor threshold: No data available
pH: No data available
Melting point/freezing point: No data available
Initial boiling point and boiling range: No data available
Flash point: No data available
Evaporation rate: No data available
Flammability: No data available
Upper/lower flammability or explosive limits: No data available
Vapor pressure: No data available
Vapor density: No data available
Relative density: No data available
Solubility: No data available
Partition coefficient: No data available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Viscosity: No data available

Section 10: Stability and Reactivity

10.1 Reactivity: No data available
10.2 Chemical stability: see section 7
10.3 Possibility of hazardous reactions: No data available
10.4 Conditions to avoid: Do not dispose of battery in fire- may explode
10.5 Incompatible materials: No data available
10.6 Hazardous decomposition products: No data available

Section 11: Toxicological Information

Acute toxicity: No data available
Potential routes of exposure/potential health effects
Skin: In case of liquid leakage, contact with skin can cause severe irritation and chemical burns.
Eye: Exposure to the liquid contained inside the battery may result in severe irritation and chemical burns
Inhalation: Inhalation of liquid vapors may cause irritation of the upper respiratory tract and lungs.
Ingestion: . If the battery case is breached in the digestive tract, the electrolyte may cause localized burns.
Skin corrosion/irritations: No data available
Serious eye damage/eye irritation: No data available
Respiratory or skin sensitisation: No data available
Germ cell mutagenicity: No data available

Carcinogenicity: Carcinogenicity: Nickel has been identified by the National Toxicology Program (NTP) as reasonably anticipated to be a carcinogen. Cobalt has been identified by IARC as a 2B carcinogen.

Reproductive toxicity: No data available

Specific target organ toxicity - single exposure: No data available

Specific target organ toxicity - repeated exposure: Chronic overexposure to nickel may result in cancer; dermal contact may result in dermatitis in sensitive individuals.

Aspiration hazard: No data available

Section 12: Ecological Information (non-mandatory)

12.1 Ecotoxicity: Under normal use this battery is not hazardous to the ecology. If the battery case is broken, the chemicals inside the battery are harmful to the environment and must be disposed of properly.

12.2 Persistence and degradability No data available

12.3 Bioaccumulative potential: No data available

12.4 Mobility in soil: No data available

12.5 Other adverse effects (such as hazardous to the ozone layer): No data available

Section 13: Disposal Considerations (non-mandatory)

13.1 Waste treatment methods

ZincFive cares about our environment and has made arrangements for users to easily recycle batteries at end of life. Call ER2, our recycling partner, at 1-844-372-0002 or visit ER2.com to schedule a pick-up and learn more. Nickel-zinc batteries must be handled in accordance with all applicable state and federal laws and regulations.

Section 14: Transport Information (non-mandatory)

14.1 UN number: No data available

14.2 UN proper shipping name: No data available

14.3 Transport hazard class(es): No data available

14.4 Packaging group: No data available

14.5 Environmental hazards: No data available

14.6 Special precautions for user

ZincFive batteries are considered to be "Dry Cell" batteries and are unregulated for the purpose of transportation by the U.S. Department of Transportation (DOT), International Civil Aviation Administration (ICAO), International Air Transport Association (IATA), and International Maritime Dangerous Goods Regulations (IMDG). The DOT requirement for shipping Nickel Zinc batteries is Special Provision 130 which states: "Batteries, dry are not subject to the requirements of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat." (For example, by the effective insulation of exposed terminals) Special Provision A123 in the IATA Dangerous Goods Regulations and ICAO Technical Instructions and Special Provision 130 in 49 CFR 172.102 of the U.S. hazardous materials regulations requires batteries being transported by air must be protected from short-circuiting and protected from movement that could lead to short-circuiting in addition, the words "Not Restricted" and "Special Provision A123" are required on the air waybill, when an air waybill is issued.

Section 15: Regulatory Information (non-mandatory)

US Federal Regulations

SARA Section 355 (extremely hazardous substances): No data available

SARA Section 313 (specific toxic chemical listings): No data available

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs): No data available

TSCA (Toxic Substances Control Act): No data available

Section 16: Other Information

The information of SDS is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information of the document is based on the present of our knowledge and is applicable to the product with regard to appropriate safety precautions.

SDS date of preparation/update: 5/24/2019