MATERIAL SAFETY DATA SHEET
MD BATTERY MATERIAL SAFETY DATA SHEET
PRODUCT NAME: NICKEL CADMIUM SEALED CELL BATTERY (Ni-Cd Series)

1. Information of Manufacturer

Manufacturer Name MD TECHNOLOGY LIMITED	Telephone Number for Information +86-755-33953225
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2. HEALTH HAZARD INFORMATION

Effects of Overexposure

Eye Effects: In the case of a fire or cell rupture the electrolyte solution inside battery is extremely corrosive to eye tissue and may result in permanent blindness. Contact with nickel oxide may cause minor irritation.

Skin Effect: Contact with electrolyte solution inside battery may cause serious burns to skin tissues. Contact with nickel compounds may cause result in chronic eczema or nickel itch.

Ingestion: Ingestion of electrolyte solution causes tissue damage to throat area and gastro/respiratory tract. Ingestion of nickel compounds causes nausea and intestinal disorders.

Inhalation: No exposure possible except in the case of fire of abuse. Effects of inhalation of cadmium and/or nickel compounds vary from mild irritation of nasal mucous membranes to damage of lung tissues proper. Inhalation of cadmium oxide may cause dry throat, cough, headache, vomiting, chest pain and chills. Chronic overexposure to cadmium compounds may result in pulmonary edema, breathing difficulty, prostration, and kidney damage.

3. EMERGENCY FIRST AID

Battery Electrolyte:

Eye Contact: Flush with plenty of water for at least 15 minutes if abuse causes safety vents to activate. Get immediate medical attention.

Skin Contact: Remove contaminated clothing and flush effected areas with plenty of water for at least 15 minutes. Wash with soap and water.

Ingestion: Do not induce vomiting. Dilute by giving water. If available give several glasses of mild. Get immediate medical attention. Do not give anything by mouth to an unconscious person.

Inhalation: Remove to fresh air. Give oxygen or artificial respiration if needed. Get immediate medical attention.

4. REACTIVITY DATA

Incompatibilities: Aluminum, zinc and other active metals, acid, chlorinated and aromatic hydrocarbons, nitro carbons, halocarbons.

Hazardous Decomposition products: Nickel oxide, cadmium, cadmium oxide and potassium hydroxide.

Hazardous Polymerization will not occur.

5. SPECIAL PROTECTION INFORMATION

Respiratory Protection: Use NOISH/MSHA approved respirator if cell broken open during a fire to maintain exposure levels below the TWA for cadmium and nickel compounds.

Eye Protection: Use splash goggles or face shield if cell activates due to abuse.

H hand Protection: If exposure to electrolyte solution, or dried salts is likely, use any water-insoluble non-performance glove, i.e., synthetic rubber. Do not use leather or wool.

Other protective equipment: Rubber apron or equivalent if exposure to electrolyte solution is likely.

6. FIRE AND EXPLOSION HAZARDS

Extinguishing Media

	Melting Point	Boiling Point
Cadmium	808° F	1410 ° F
Cadmium Oxide	N/A	2840 ° F
Nickel	2645 ° F	4850 ° F
Nickel Hydroxide	N/A	445 ° F(Decomposes to NiO)
Nickel Oxide	3605 ° F	90 ° F (Decomposes to Ni and O_2)

Special Fire Fighting Procedure: Use self-contained breathing apparatus to avoid breathing toxic fumes. Wear protective clothing and equipment to prevent potential body contact with electrolyte solution or mixture of water and solution.

Fire and Explosion Hazards: Electrolyte solution is corrosive to all human tissues. It will react violently with many organic chemicals, especially nitro carbons and chlorocarbons. Electrolyte solution reacts with zinc, aluminum and other active materials, releasing flammable hydrogen gas.

Cadmium fumes may be released when batteries are subjected to high temperature. In case of fire, do not take in smoke and fume.

7. Ingredients EXPOSURE LIMITS QUANTITY

Cadmium(as Cadmium, Cadmium Hydroxide, and Cadmium Oxide)	5 mog/m^3 dust – OSHA	≈17%
Nickel(as Nickel, Nickel Hydroxide, and Nickel Oxide)	1mg/ m^3 -OSHA	≈19%
KOH	2mg/ m^3 ACGIH Ceiling Air	≈1%
Cobalt Hydroxide (as Cobalt Metal)	0.1mg/ m^3 dust – OSHA	≈1%

8. PHYSICAL PROPERTIES

Boiling Point: Not applicable Melting pointing: Not applicable
Vapor Pressure: Not applicable Vapor Density: Not applicable
Specific Gravity: 1.17-1.250(electrolyte) Evaporation Rate: Not determined
Solubility in water: Electrolyte solution is completely soluble
REMAINDER: INSOLUBLE

9. SPILL MANAGEMENT PROCEDURES

Electrolyte Spill: Flush with water and neutralize with dilute vitriol.

10. DISPOSAL INFORMATION

Battery is TCLP Toxic. Battery and electrolyte solution are corrosive. If not recycled, must be disposed of in accordance with all international, national, provincial regulations.

11. PRECAUTIONS AND COMMENTS

These cells and batteries manufactured from them may be highly charged and are capable of high-energy discharge. Care should be taken to handle cells properly to avoid shorting or misuse that will result in rapid uncontrolled electrical, chemical, or heat energy release.
Do not short circuit---may cause burns.
Do not break open cell.
Do not allow an exposed flame or spark to come near the cells.

12. Storage Information

These cells and batteries shall not be stored in high temperature, the maximum temperature is 45℃(less than one month), otherwise the cells and batteries maybe leakage. Besides, the cells and batteries shall be protected from short circuit and protected from movement that could result in short circuit.

13. Ecological Information

N/A

14. Disposal Method

Disposal of batteries comply with government regulations.
Must comply with packing instruction of LATA DGR 52th Edition 2011.

15. Transportation Information

MD Technology Limited Manganese Dioxide Coin Cell are considered to “dry cell” batteries and are not regulated for 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) Shipping these is subject to the only requirements by DOT is Special Provision 130i.e batteries, dry are not subject to the requirement of this subchapter only when they are offered for transporation manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals) . Shipping these batteries is subject to the only requirements by ICAO and IATA is Special Provision A123i.e”. An electrical battery or battery powered device having the potential of dangerous evolutions of heat that is not prepared to prevent a short- circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals ;or in the case of equipment, by disconnection of the battery and protection of exposed terminals) is forbidden from transportation.” The International Maritime Dangerous Goods Code(IMDG) regulate them for ocean transportation under Special Provision 304 which says:” Batteries , dry , containing corrosive electrolyte which will not flow out of the battery case is cracked are not subject to the provisions of this Code Provided the batteries are securely packed and protected against short-circuits Example of such batteries are: Manganese Dioxide Coin Cell, zinc carbon, nickel metal hydride and nickel-cadmium batteries.

We hereby further certify that the consignment can be shipped an NOT RESTRICTED in accordance with the 53rd Edition of IATA DANGEROUS GOODS REGULATIONGS and all applicable carriers and government regulations. The product safety conditions met the IATA DGR-Special Provision A123.

16. Regulatory Information

Special requirements shall comply with local regulations.

17. Other Information

The data in this MSDS relates only to the specific material designed herein.

18. Measure for fire extinction

In case of fire, it is permitted to use any class of extinguishing medium on those batteries or the packing material. Cool exterior of batteries if exposed to fire to prevent rupture.
Fire fighters should wear self-contained breathing apparatus.

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