



Intec Industries Co., Ltd.
Room 2703, Well Tech Centre
9 Pat Tat Street, San Po Kong, Hong Kong
Tel : (852) 2885 1100
Fax : (852) 2947 0588

MATERIAL SAFETY DATA SHEET

1. Name of Product and Manufacturer

Name of Product : Nickel Cadmium rechargeable cell or battery pack
Name of Company : Intec Industries Co., Ltd.
Address : Rm 2703, Well Tech Centre, 9 Pat Tat Street, San Po Kong, HK
Telephone number : (852) 2885 1100
For emergency : (852) 2885 1193

Effective date: January 3, 2017

2. Hazards identification

GHS Classification : Not applicable
Hazard : Electrolyte, Nickel and Cadmium compound are non-flammable.
Risk of explosion by fire if batteries are disposed in fire or heated above 100 degrees C.
Stacking or jumbling batteries may cause external short circuits, heat generation, fire or explosion.
Toxicity : Vapor generated from burning batteries, may make eyes, skin and throat irritate.

3. Compositions

IMPORTANT NOTE: The battery cell should not be opened or exposed to heat because exposure to the following ingredients contained within could be harmful under some circumstances.

<u>Chemical Name</u>	<u>Percentage by Weight</u>
Cadmium	10-28%
Cadmium metal [CAS no: 7440 – 43 – 9]	
Cadmium oxide [CAS no: 1306 – 19 – 0]	
Cadmium hydroxide [CAS no: 21041 – 95 – 2]	
Cobalt	0-3%
Cobalt metal [CAS no: 7440 – 48 – 4]	
Cobalt oxide [CAS no: 1307 – 96 – 6]	
Cobalt hydroxide [CAS no: 21041 – 93 – 0]	
Nickel	18-36%
Nickel metal [CAS no: 7440 – 02 – 0]	
Nickel oxide [CAS no: 1313 – 99 – 1]	
Nickel hydroxide [CAS no: 12054 – 48 – 7]	
Potassium	0-4%
Potassium hydroxide [CAS no: 1310 – 58 – 3]	
Sodium	0-4%
Sodium hydroxide [CAS no: 1310-73-2]	

Remarks: Concentrations may vary under different condition of charging or discharging



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4. First Aid Measures

The product contains inorganic electrolyte. In case electrolyte leakage from the battery, action described below are required.

- Eye contact : Exposure of eye to contents of an open cell will cause chemical burns and severe irritation. Rinse thoroughly with large quantity of distilled water at once, and seek medical attention immediately.
- Skin contact : Electrolyte will cause chemical burns, and others chemical compound may cause allergic dermatitis. Remove contaminated clothing at once, and rinse with large quantity of water. If the symptoms persist, seek medical attention.
- Inhalation : Do not dispose of cells or battery packs in fire or mutilate, they may burst explosively or release toxic fumes. Inhalation of those may cause significant harm to human body. Provide fresh air at once and seek medical attention.

5. First Fighting Measures

- Extinguishing method : If fire or explosion occurs when the cells or battery packs are being charged, stop charging immediately.
Fire fighters should wear self-contained breathing apparatus.
Nickel Cadmium batteries involved in a fire can produce toxic fumes including oxides of nickel and cobalt.
- Fire extinguishing agent: Dry sand is effective and any class of extinguish medium should be considered on the cell/battery packs or packing material.

6. Measures for electrolyte leakage from the battery

- Take up with absorbent cloth.
- Move the battery away from the fire.



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7. Handling and Storage

- Storage : - Cells or Battery packs should be stored in a cool, dry and well ventilated area. Cell life degradation is a function of time, even if the battery is never used. As temperature increases, the degradation rate of the cell increases, making it desirable to keep inventory between 0°C to 30°C when practical. Cells or battery packs that will be stored for extended periods should undergo regular OCV checks and receive boost charges on a regular schedule.
- Do not store the battery in place of the high temperature or under direct sunlight or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, water drop or not to store it under frozen condition.
- Airtight, watertight Compartment : - Cell or battery packs normally evolve very small amount of hydrogen, which might cause harm to human body. In an airtight compartment, proper ventilation is suggested.
- Packaging : - When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
- Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
- Short Circuit : - Care must be exercised in the handling and use of the cells or battery packs to avoid external shorts. A current-limited device such as a fuse, resistor, diode, or circuit breaker, may be used in the discharge circuit to prevent short-circuit current.
- Soldering or Welding : - Avoid solder or weld to cells directly, contact Intec Industries Co., Ltd. for the proper handling procedures whenever in doubt.
- Charging : - Incorrect chargers or reverse charging may result high temperature and gas formation, which risk fire or cell rupture. Do not leave the cell or battery packs charging over extend period unless it is specifically designed to do so.



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- Cautions :
- Do not dispose in fire, mix with other battery types, charge above specified rate, connect improperly, or short circuit, which may result in overheating, explosion or leakage of cell contents.
 - Do not incinerate or subject battery cells to temperature in excess of 100°C. Such treatment can cause cell rupture.
 - 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. There can be a delay between exposure to air and spontaneous combustion.
 - Do not let water penetrate into packaging boxes during their storage and transportation.
 - Fire fighting apparatus should be installed.

8. Exposure Control (in case of electrolyte leakage from the battery)

- Acceptable condition : Not specified in ACGIH.
Facilities : Provide appropriate ventilation system such as local ventilator in the storage place.
Protective clothing : Gas mask for toxic gases, safety goggle, and safety glove.

9. Physical and Chemical Properties

- Appearance : Cylindrical can shape
Voltage : 1.2 volts

10. Stability and Reactivity

Since batteries utilize a chemical reaction they are actually considered a chemical product. As such, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, the various usage conditions such as discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage.



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11. Toxicological Information (in case of electrolyte leakage from the battery)

Acute toxicity	:	Not specified.
Irritation	:	Irritating to eye and skin.
Mutagenicity	:	Not specified.
Chronic toxicity	:	Not specified.

12. Ecological Information

In case of the worn-out battery was disposed in land, the battery case may be corroded, and leak electrolyte. But, we have no ecological information.

13. Disposal Considerations

When the battery is worn-out, dispose of it under the ordinance of each local government or the law issued by relating government.

14. Transportation Information

Intec sealed Nickel Cadmium batteries are considered to be "dry cell" batteries and is not regulated by International Maritime Dangerous Goods Regulation (IMDG). Improperly packed cells or battery packs when exposed to the vibration of long-distance transportation can be caused short circuit. The keys to proper shipment are as the follows:

- a. Possible insulate the tables to prevent contact.
- b. Cells or battery packs are heavy and deserve the protection of adequate strength boxes.
- c. If stacking cells vertically, insulation between layers of cells must resist breaking down under the stress of transportation.
- d. Avoid over stacking boxes of cells or battery packs so that the packaging of the lower tier is damaged.
- e. During the transportation of a large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to condensation.
- f. During the transportation do not allow packages to be fallen down or damaged.
- g. "Dry cell" batteries and are not subject to dangerous goods regulation for the purpose of transportation by the U.S. Department of Transportation (DOT), the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA) or the International Maritime Dangerous Goods regulations (IMDG). The only DOT requirement for shipping Nickel Cadmium batteries is Special Provision A123 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)." IATA requires that batteries being transported by air must be protected from short-circuiting and protected from movement that could lead to short-circuiting.



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15. Regulatory Information

IATA Dangerous Goods Regulations
ICAO Technical Instructions for the safe transport of dangerous goods by air

16. Other Information

This MSDS is provided in good faith and generally descriptive only and is not intended to make or imply any representation of warranty with respect to any product. Intec Industries Co., Ltd. reserves the rights on modification of this document without prior notice.

Potential hazards may arise from the improper use of cells or battery packs. Manufacturers and assemblers of battery-using systems, that are properly designed and that adequate battery handling procedures should be in place.