

Material -Safety -Data Sheet(MSDS)

for

JYH NiCD Batteries

Single cells and multi-cell battery packs

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Reference no .:MSDS-JYH07-NiCD-2016

1. Product and Supplier Identification

Product name: JYH NiCD Battery
Type: Sealed rechargeable nickel-cadmium battery
Models / types: Round cells
Electrochemical system: Nickel hydroxide/Cobalt hydroxide (positive electrode)
cadmium hydroxide (negative electrode)
Potassium hydroxide (electrolyte)

Supplier:

JYH Battery Company Limited

Address: Unit 1610, Yuen Long Trading Centre, 33 Wang Yip Street West, Yuen Long,
New Territories, Hong Kong.

2. Hazards Identification

The rechargeable NiCD batteries described in this Product Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer and as long as their integrity is maintained.

Do not short circuit, puncture, incinerate, crush, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion.

Under normal conditions of use, the active materials and liquid electrolyte contained in the cells and batteries are not exposed to the outside, provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery container. Electrolyte leakage or battery vent/explosion/fire may follow, depending upon the circumstances.



3. Composition and Information on Ingredients

Each cell consists of a hermetically sealed metallic container containing a number of chemicals and materials of construction of which the following could potentially be hazardous upon release.

Ingredient	Content	CAS No.	CHIP Classification	
Nickel (hydroxide) Ni (OH) ₂	15 -20%	12054-48-7	Xn; harmful	R20/22; R40; R43 S2; S22; S26
Cadmium (hydroxide) Cd (OH) ₂	15 -20%	21041-95-2	Xn; harmful	R20/21/22; R507 S2; S60; S61
KOH Potassium hydroxide	8 -15%	1310-58-3	C; Xi; corrosive, irritant	S1/2; S26; S36/3 R35; R22; R36/37
Steel (Fe)	20 -30%			not classified
Co (OH) ₂ Cobalt (hydroxide)	0.3 -1%	21041-93-0	C; corrosive	not classified
Lithium (hydroxide) Li OH	2 -4%	1310-65-2	C; corrosive	not classified
Polypropylene (PP)	2 -4%	9003-07-0		not classified
Polyethylene (PE)	0.2 -0.5%	9002-88-4		not classified
PVC	0.5 -1%	9002-86-2		not classified

4. First Aid Measures

In case of accumulator breakage or burst, please evacuate employees from the contaminated area and ensure maximal ventilation in order to break-up corrosive gas, smoke and unpleasant odours.

If it occurs, by accident, following measures must be taken:



Inhalation: Provide fresh air. In severe cases obtain medical attention.

Skin Contact: Wash off skin thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases obtain medical attention.

Eye Contact: Irrigate thoroughly with water for at least 15 minutes. Lifting upper and lower lids, until no evidence of the chemical remains. Obtain medical attention.

Ingestion: Wash out mouth thoroughly with water. Do not induce vomiting or give food or drink. Seek medical attention immediately.

Further treatment: All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapours should be seen by a doctor.

5. Fire Fighting Measures

Extinguishing media	Suitable: ClassD-Dry chemical, sand, CO2 Not to be used: Water
Special exposure hazards	Cells can be overheated by an external source or by internal shorting and release alkaline electrolyte mist or liquid. In fire situations fumes containing Cadmium may evolve. Electrolyte reacts with zinc, aluminium, tin and other active materials releasing flammable hydrogen gas.
Special protective equipment	Use self-contained breathing apparatus and full-fighting protective clothing.

6. Accidental Release Measures

Remove personnel from area until fumes dissipate. Do not breathe vapours or touch liquid with bare hands. Provide sufficient room ventilation if required.

If the skin has come into contact with the electrolyte, it should be washed thoroughly with water.

Use neoprene or natural rubber gloves and protective glasses, if handling an open or leaking battery. Battery materials should be collected in a leak-proof container and disposed of as Special Waste in accordance with local regulations.

7. Precautions for safe Handling and Use

Storage: Store in a cool (preferable below 25°C), well ventilated area, away from moisture, sources of heat, and open flames.

Elevated temperatures can result in shortened battery life. Temperatures above 70°C may result in battery leakage and rupture.

Keep adequate clearance between walls and batteries.

Since short circuit can cause burn, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.

Handling: Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods, which would end up into excessive heating.

Do not directly heat or solder. Do not throw into fire.

Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non conductive (i.e. plastic) trays.

Do not disassemble, mutilate or mechanically abuse cells and batteries.

In order to prevent seal or safety vent damage, never solder the batteries directly at the battery



terminals.

Charging: This battery is made to be charged many times. Use only specified charger. Follow manufacturer data in respect of charge current and charge time. Note correct polarity. Improper charging can cause heat damage or even high pressure rupture.

Disposal: Dispose in accordance with all applicable federal, state and local regulations.

8. Special Protection Information

Ventilation Requirements: Not necessary under normal conditions. Room ventilation may be required in areas where there are open or leaking batteries.

Respiratory Protection: Not necessary under normal conditions. Avoid exposure to electrolyte fumes from open or leaking battery. In all fire situations use self-contained breathing apparatus

Eye Protection: Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.

Hand Protection: Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery

9. Physical and Chemical Properties

Note: The following points are not applicable unless in case of leaking or damaged batteries with exposed internal components.

Appearance: Nickel plated steel cylindrical cell, eventually sleeved.

Odour: Odourless (unless in case of damaged product with leaking electrolyte)

Flashpoint: Not applicable

Flammability: Not applicable

Relative density: > 2 g/cm³

Specific energy: 20...50Wh/kg

Temperature range: Usage recommended between -40°C and +70°C.

10. Stability and Reactivity

Product is stable under conditions described in Section 7.

Conditions to avoid: Heat above 70° or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Short circuit. Expose over a long period to humid conditions.

Materials to avoid: Strong mineral acids, alkali solutions, strong oxidising materials and conductive



Hazardous decomposition products: Electrolyte solution is corrosive to all human tissues and will react violently with many organic chemicals. Electrolyte solution reacts with zinc, aluminum, tin and other materials releasing flammable hydrogen gas.

11. Toxicological Information

Sealed Nickel cadmium batteries as a product are not presenting toxicological hazards.

In case of can opening or destruction, the following substances can be released:

Substances			Hazards		
Name	N° EC N° CAS N° EINEC	Symbol	Effects	Dust exposure limits	Carcinogenicity mutagenicity protoxicity
Cadmium	048-002-00-0 7440-02-0 231-111-4	Cd(OH) ₂	LD50. Not available	VME: 50µg/m ³ VLE: 50µmg/m ³ (for CdO)	Carc. Cat 2/ Muta Cat 3/ Repro cat 3
Nickel-Hydroxyde	028-008-x* 12054-48-7 235-008-5	Ni(OH) ₂	LD50/oral/rat: 1600mg/kg	VME: 1000µg/m ³ VLE: /	Occupational
Cobalt-Hydroxyde	- 21041-93-0 244-166-4	Co(OH) ₂	LD50/oral/rat: 795mg/kg	VME: 100µg/m ³ VLE: /	/
Alkaline-Hydroxydes	019-002-00-8 1310-58-3	KOH NaOH LiOH	LD50/oral/rat: 365mg/kg	KOH VME: 2mg/m ³ NaOH VME: 2mg/m ³ LiOH VME: 25µg/m ³	/

12. Ecological Information

The sealed NiCD cells as a product are not presenting ecotoxicological hazards. In case of product destruction or opening, the substances described in paragraph 11 can come in contact of the environment. The metals content in a NiCD battery are toxics for the environment.

If not recycled, it must be disposed of in accordance with all state and local regulations.

13. Disposal Considerations

- Incineration** Never incinerate NiCd batteries
- Landfill** Never dispose NiCd batteries as landfill
- Recycling** Nickel Cadmium batteries can be fully recyclable. They are submitted to the European Community Directive 91-157/CE. Ansmann recommends proper recycling of these batteries whenever possible.



14. Transport Information

IATA DGR: Special Provision A123: "Examples of such batteries are: alkali-manganese, zinc-carbon, nickelmetal 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.

The consignment is fully described by Proper Shipping Name is not classified as dangerous under the IATA DANGEROUS GOODS REGULATIONS. Also the consignment is packed with protection of exposed terminals so as to prevent the potential danger by short-circuiting, according to Special Provision A123 under IATA DANGEROUS GOODS REGULATION (DGR)– 57th Edition 2016.

15. Regulatory Information

NickelCadmium batteries are submitted to the European community directive 91-157/CE for recycling. Substances contained are submitted to the REACH 06-1907/CE regulation. NiCd batteries are classified as hazardous waste in category D006 (cadmium) according the RCRA act and the Toxic Substance Control act of the US Environment Protection Agency.

EPCRA reporting requirements: this product contains the following EPCRA Section 313 chemicals subject to the reporting requirements of section 313 in the Emergency Planning and Community Right-To-Know Act of 1986 (40CFR 372): Nickel, Cadmium and Cobalt according table paragraph 3.

In US, a copy of this MSDS may be required to be filed with your local emergency planning commission, state emergency response commission, and local fire department in accordance with sections of the Emergency planning and Community Right-To-Know Act.

16. Other Information

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.

This information relates to the specific materials designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.

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