Material - Safety - Data Sheet (MSDS)

for

Ansmann NiMH Batteries

single cells and multi-cell battery packs

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1. Product and Supplier Identification

Product name:	Ansmann NiMH Battery
Type:	Sealed rechargeable nickel-metal-hydride battery
Models / types:	Prismatic and round cells
Electrochemical system:	Nickel hydroxide (positive electrode) Metal hydroxide (negative electrode) Potassium hydroxide (electrolyte)
Supplier:	
Germany	ANSMANN AG
Address:	Industriestraße 10; 97959 Assamstadt; Germany
Phone / Fax:	+ 49 (0) 6294 42040 / + 49 (0) 6294 420444
Home / email:	ansmann.de / info@ansmann.de
USA	ANSMANN USA Corporation
Address:	10 Washington Avenue; 07004 Fairfield; New Jersy; USA
Phone / Facsimile:	+1 973 4395244 1012 / +1 973 2062006
email:	USA@ansmann.de
United Kingdom	ANSMANN Energy (UK) LTD
Address:	Units 19/20, Maple Park; Essex Road; Hoddesdon; Hertfordshire EN11 0EX; UK
Phone / Facsimile:	+44 (0) 870 609 2233 / +44 (0) 870609 2234
email:	UK@ansmann.de
Hong Kong	ANSMANN Energy Int. LTD.
Address:	Unit 01-02, 10/F Floor Tung Wai Commercial Building, 109-111 Gloucester Road, Wan Chai, Hong Kong
China	HuiZhou City ANSMANN Trading Co. LTD
Address:	Da Lian Industrial Park, Rengtu Village Ruhu Town Huicheng District, 516169 Huizhou City Guangdong, China
Sweden	ANSMANN Nordic AB
Address:	Victor Hasselblads Gata 11, 421 31 Västra Frölunda, Sweden

EMERGENCY CONTACT: For chemical emergency only (spill, leak, fire, exposure or accident)
call CHEMTREC at: 800-424-9300 within the USA and Canada
+1 703-527-3887 outside the USA and Canada
Non-emergency calls cannot be serviced at this number.

2. Hazards Identification

The rechargeable NiMH 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 Informations 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.	ACGIH (TLV)	OSHA (PEL)
Nickel (Ni) (powder)	30 - 45%	7440-02-0	1 mg/m^3 TWA	1 mg/m^3 TWA
Nickel Hydroxide $Ni(OH)_2$	20 - 30%	12054-48-7	1 mg/m^3 TWA	1 mg/m^3 TWA
Cobalt (Co)	1 - 5%	7440-48-4	0.1 mg/m^3 TWA (as Co)	0.1 mg/m^3 TWA (as Co)
Manganese (Mn)	1 - 3%	7439-96-5	0.2 mg/m^3 TWA (asMn)	5 mg/m^3 dust ceiling limit
Zinc (Zn)	< 3%	7440-66-6	10 mg/m^3 TWA total dust	15 mg/m^3 TWA total dust
Aluminum (Al)	0 - 2%	7429-90-50	10 mg/m^3 metal dust	15 mg/m^3 dust 5 mg/m^3 respirable fraction
Lanthanum (Ln)	< 10%	7439-91-0	none established	none established
Cerium (Cer)	< 10%	7440-45-1	none established	none established
Neodymium (Nd)	< 10%	7440-00-8	none established	none established
Potassium Hydroxide (KOH)	5 - 10%	1310-58-3	2 mg/m^3 ceiling limit	none established
Sodium Hydroxide (NaOH)	0 - 5%	1310-73-2	2 mg/m^3 ceiling limit	2 mg/m^3 TWA
Lithium Hydroxide (LiOH)	0 - 4%	1310-65-2	none established	none established
Stainless Steel (Fe)	15 - 30%	7439-89-6	none established	none established

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 casualities who have swallowed this substance or been affected by breathing its vapours should be seen by a doctor.

5. Fire Fighting Measures

If fire or explosion occurs when batteries are on charge, shut off power to charger.

In case of fire where nickel metal hydride batteries are present, apply a smothering agent such as METL-X, sand, dry ground dolomite, or soda ash, or flood the area with water. A smothering agent will extinguish burning nickel metal hydride batteries. Water may not extinguish burning batteries but will cool the adjacent batteries and control the spread of fire. Burning batteries will not burn themselves out. Virtually all fires involving nickel metal hydride batteries can be controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended.

Fire fighters should wear self-contained breathing apparatus. Burning nickel metal hydride batteries can produce toxic fumes including oxides of nickel, cobalt, aluminum, lanthanum, cerium and neodymium

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℃), well venti lated area, away from moisture, sources of heat, and open flames.
Elevated temperatures can result in shortened battery life. Temperatures above 70℃ 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, evenually 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: 30…90Wh/kg

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

10. Stability and Reactivity

Product is stable under conditions described in Section 7.

Conditions to avoid: Heat above 70° or incinerate. Deform. Mutilate. Cru sh. 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 materials.

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

Nickel metal hydride batteries are not hazardous waste. Under normal conditions of use, Ni-MH batteries are non-toxic.
In case of can opening or destruction, the following substances can be released:

Substances			Hazards		
Name	N°EC N°CAS N°EINIC	Symbol	Effects	Dust exposure limits	Carcinogenicity mutagenicity protoxicity
Nickel	028-002-00-7 7440-02-0 231-111-4	Ni	Xn	Nocif	R 40-43 R 17
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 NiMH 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 NiMH 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

USA: NiMH batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials and are accepted for recycling by the Rechargeable Battery Recycling Corporation's (RPBC) Battery Recycling Program. Please go to the RPBC website at www.rbrc.org (www.call2recycle.org) for additional information.

In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the DIRECTIVE 2006/66/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC. Customers find detailed information on disposal in their specific countries using the web site of the European Portable Batteries Association ***(http://www.epbaeurope.net/legislation_national.html)***

Importers and users outside EU should consider the local laws and rules.

In order to avoid short circuit and heating, used nickel metal hydride cylindrical cells and batteries should never be stored or transported in bulk. Proper measures against short circuit are:
- Storage of batteries in their original packaging
- Coverage of the terminals

14. Transport Information

Nickel Metal Hydride Batteries (sometimes referred to as "Dry Cell" batteries) are not listed as dangerous goods under the International Civil Aviation Organization ((ICAO), 2011-2012 edition, International Air Transport Asoociation (IATA) and U.S. Department of Transportation (DOT), 49 CFR.
These batteries are not subject to the dangerous goods regulations provided they meet the requirements contained in the following Special Provisions:
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 require these batteries to be packed in such a way to prevent short circuits or generating a dangerous quantity of heat.
In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words "Not Restricted" and "Special Provision A123" be provided on the air waybill, when an air waybill is issued.
By ocean the International Maritime Organization (IMO) regulates them as Class 9 dangerous good under UN 3496 and Special Provision 117 and 963 which allows a total quantity of less than 100kg gross mass to be transported as non-regulated.

15. Regulatory Information

Survey of Standards:

Regulatory Body	Special Provisions
ADR	295 - 304, 598
IMDG	UN 3496 - Special Provision SP 963
UN	UN 3028 Provisions 295 - 304
US DOT	49 CFR 172.102 Provision 130
IATA	A123
ICAO	UN 3028 Provisions 295 - 304

Ni-MH batteries are submitted to the European Community Directive 91-157/CE for recycling.
Substances contained are submitted to the REACH 06-1907/CE regulation

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.
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