

Material Safety Data Sheet

1. Product Identification

Product:	Nickel Metal Hydride Battery, rechargeable
Nominal voltage:	4.8 V
Nominal capacity:	400 mAh
Manufacturer:	Conrad Electronic SE
Address:	Klaus-Conrad-Str. 1, D-92240 Hirschau
Telephone:	+49 (0) 9604 / 40 - 8988
Date of issue	13.09.2019

2. Hazards Identification

Preparation hazards and classification

When the battery is in extreme pressure deformation, high-temperature environment, overload, short-circuit condition, or disassemble the battery, an explosion of fire and chemical burn hazards may occur.

Appearance, Color, and Odor

Solid object with no odor, no color.

Primary Route(s) of Exposure

These chemicals are contained in a sealed stainless steel enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact

Potential Health Effects:

ACUTE (short term):

See Section 8 for exposure controls.

In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.

Inhalation:

A battery volatilizes no gas unless it was damaged. Damaged battery will volatilize little gas that may stimulate the respiratory tract or cause an anaphylaxis in serious condition.

Ingestion:

Swallowing battery will be damaged to the respiratory tract and cause chemical burns to the stomach; in serious conditions it will cause Permanent damage. Skin: In normal condition, Contact between the battery and skin will not cause any harms. Contact with a damaged battery may cause skin allergies or chemical burns.

Eye:

In normal condition, contact between the battery and eyes will not cause any harms. However, the gas Volatilize from a damaged battery may be harmful to eyes.

CHRONIC (long term):

See Section 11 for additional toxicological data

Medical Conditions Aggravated by Exposure

Not applicable

Reported as carcinogen

Not applicable

Item no.: 1953900

Material Safety Data Sheet

3. Composition/Information on Ingredients

NI-MH Battery is a mixture.

Hazardous Ingredients (Chemical Name)	Concentration or concentration ranges (%)	CAS Number
Ni	4.9	7440-02-0
Nickel hydroxide	23.9	12054-48-7
Nickel (plated steel)	16.9	12054-48-7
Mischmetal powder (Co Ni Na Ce)	34.3	--
Cobalt monoxide	2.7	11104-61-3
Cu	5.4	7440-50-8
Rubber	0.3	63394-00-3
Nylon	0.6	24937-16-4
Polypropylene	2	9003-07-0
K	3.5	13966-00-2
Na	/	7440-23-5
Li	/	7439-93-2
H2O	5.5	7732-18-5

Note:

CAS number is Chemical Abstract Service Registry Number.

N/A=Not apply.

Material Safety Data Sheet

4. First-aid Measures

Inhalation

If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.

Skin contact

If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

Eye contact

If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.

Ingestion

If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

5. Fire-fighting Measures

Flammable Properties

In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.

Suitable extinguishing Media

Use extinguishing media suitable for the materials that are burning.

Unsuitable extinguishing Media

Not available

Explosion Data

Sensitivity to Mechanical Impact: This may result in rupture in extreme cases

Sensitivity to Static Discharge: Not Applicable

Specific Hazards arising from the chemical

Fires involving NI-MH Battery 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 to extinguish the fire

Protective Equipment and precautions for firefighters

As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

NFPA

Health: 0 Flammability: 0 Instability: 0

Material Safety Data Sheet

6. Accidental Release Measures

Personal Precautions, protective equipment, and emergency procedures

Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8.

Environmental Precautions

Prevent material from contaminating soil and from entering sewers or waterways.

Methods and materials for Containment

Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.

Methods and materials for cleaning up

Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

7. Handling and Storage

Handling

Do not dismantle, open or shred secondary NI-MH Battery;

Don't handling NI-MH Battery with metalwork. Do not open, disassemble, crush or burn battery. Ensure good ventilation/exhaustion at the workplace.

Prevent formation of dust.

Information about protection against explosions and fires: Keep ignition sources away-Do not smoke.

Storage

If the NI-MH Battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the NI-MH Battery periodically.

3 months: -10°C~+40°C, 45 to 85%RH

And recommended at 0°C~+35°C for long period storage.

The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. Do not storage NI-MH Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

Keep out of reach of children.

Do not expose NI-MH Battery to heat or fire. Avoid storage in direct sunlight.

Do not store together with oxidizing and acidic materials.

Material Safety Data Sheet

8. Exposure Controls and Personal Protection

Engineering Controls

Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.

Personal Protective Equipment

Respiratory Protection:

Not necessary under normal conditions.

Skin and body Protection:

Not necessary under normal conditions, Wear neoprene or nitrile rubber gloves if handling an open or leaking battery.

Hand protection:

Wear neoprene or natural rubber material gloves if handling an open or leaking battery.

Eye Protection:

Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery.

Other Protective Equipment

Have a safety shower and eye wash fountain readily available in the immediate work area.

Hygiene Measures

Do not eat, drink, or smoke in work area. Maintain good housekeeping.

Material Safety Data Sheet

9. Physical and Chemical Properties

Physical State

Form:	Cylindrical
Odour:	Monotony

Change in condition:

pH, with indication of the concentration	Not applicable.
Melting point/freezing point	Not available.
Boiling Point, initial boiling point and Boiling range	Not available.
Flash Point	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapor Pressure:	Not applicable.
Vapor Density: (Air = 1)	Not applicable.
Density/relative density	Not available.
Solubility in Water	Insoluble.
n-octanol/water partition coefficient	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Odour threshold	Not available.
Evaporation rate	Not available.
Flammability (soil, gas)	Not available.
Viscosity	Not applicable.

10. Stability and Reactivity

Stability

The product is stable under normal conditions.

Conditions to Avoid (e.g. static discharge, shock or vibration)

Do not subject NI-MH Battery to mechanical shock. Vibration encountered during transportation does not cause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.

Incompatible Materials

Not Available

Hazardous Decomposition Products

This material may release toxic fumes if burned or exposed to fire

Possibility of Hazardous Reaction

Not Available

Material Safety Data Sheet

11. Toxicological Information

In normal condition, contact with the battery is non-toxic.

12. Ecological Information

General note:

Water hazard class 1 (Self-assessment): slightly hazardous for water.

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Anticipated behavior of a chemical product in environment/possible environmental impact/ecotoxicity.

Not Available

Mobility in soil

Not Available

Persistence and Degradability

Not Available

Bioaccumulation potential

Not Available

Other Adverse Effects

Not Available

13. Disposal Considerations

Product disposal recommendation:

Observe local, state and federal laws and regulations.

Packaging disposal recommendation:

Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't disassemble the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.

The potential effects on the environment and human health of the substances used in batteries and accumulators; the desirability of not disposing of waste batteries and accumulators as unsorted municipal waste and of participating in their separate collection so as to facilitate treatment and recycling;

Material Safety Data Sheet

14. Transport Information

This report applies to by sea, by air and by land.

The Ni-MH batteries according to SP A199 of the 2019 IATA Dangerous Goods regulations 60th Edition may be transported. and applicable U.S. DOT regulations for the safe transport of Ni-MH rechargeable batteries .

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

The Ni-MH batteries having the potential of a dangerous evolution of heat must be prepared for transport so as to prevent: (a) 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); and (b) unintentional 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 package must be handled with care and that a flammability hazard exists if the package is damaged.

15. Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

Hazardous _____ Non-hazardous ___V___

16. Other Information

The information above is believed to be accurate and represents the best information currently available to us. however, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use.

Users should make their own investigations to determine the suitability of the information for their particular purposes. although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.