

Material Safety Data Sheet

1. Product Identification

Product:	Nickel Metal Hydride Battery, rechargeable
Nominal voltage:	4.8 V
Nominal capacity:	600 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. Hazardous Ingredients

IMPORTANT NOTE: The product is a manufactured article as described in 29 CFR 1919.1200. The battery cell is contained in a hermetically-sealed case, designed to with stand temperatures and pressures encountered during normal use. As a result, during normal use, hazardous materials are fully contained inside the battery cell. 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.

The following information is provided for the user's information only.

Chemical Name	CAS No.	OSHA PEL (mg/m3)	ACGIH TLV (mg/m3)
Nickel Hydroxide	12054-48-7	40%	--
Nickel (foam)	7440-02-0	25%	--
Cobalt	7440-48-4	10%	--
Iron	7440-66-6	10%	--
Potassium hydroxide	7440-50-8	5.0%	--
Lithium hydroxide	7440-00-8	5.0%	--
Sodium hydroxide	1310-58-3	3.0%	--
Manganese	1310-65-2	1.5%	--
Aluminum	1310-73-2	0.5%	--

- Notes:
1. Concentrations vary depending on the state of charge or discharge
 2. TWA is the time weighted average concentration over an 8-hour period.

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3. Physical Data for Battery

Melting point (°C)	N/A
Boiling point (°C)	N/A
% Volatile by Volume	N/A
Vapor Pressure (mm Hg)	N/A
Evaporation Rate	N/A
Vapor Density (Air = 1)	N/A
Evaporation Rate	N/A
Specific Gravity (H2O)	N/A
Solubility in Water	N/A
Appearance and Odor	No Odor

4. Fire and Explosion Hazard Data

Flash Point:	NA
Lower Explosive Limit:	NA
Upper Explosive Limit:	NA

Extinguishing Media:

Any class of extinguishing medium may be used on the batteries or their packing material

Special Fire Fighting Procedures:

Exposure to temperatures of above 100°C can cause venting of the liquid electrolyte. Internal shorting could also cause venting of the electrolyte. There is potential for exposure to iron, nickel, cobalt, rare earth metals (cerium, lanthanum neodymium, and praseodymium), manganese, and aluminum fumes during fire; use self-contained breathing apparatus.

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5. Health Hazard Data

Threshold Limit Values: See Section 2

Effects of a Single (Acute) Overexposure:

Inhalation:

During normal use inhalation is an unlikely route of exposure due to containment of hazardous materials within the battery case. However, should the batteries be exposed to extreme heat or pressures causing a breach in the battery cell case, exposure to the constituents may occur. Inhalation of cobalt dusts may result in pulmonary conditions.

Ingestion:

If the battery case is breached in the digestive tract, the electrolyte may cause localized burns. Skin absorption: No evidence of adverse effects from available data.

Skin Contact:

Exposure to the electrolyte contained inside the battery may result in chemical burns. Exposure to nickel may cause dermatitis in some sensitive individuals.

Eye Contact:

Exposure to the electrolyte contained inside the battery may result in severe irritation and chemical burns.

Carcinogenicity:

Nickel has been identified by the National Toxicology Program (NTP) as reasonably anticipated to be a carcinogen. Cobalt has been identified by IARC as a 2B carcinogen.

Other Effects of Repeated (Chronic) Exposure:

Chronic overexposure to nickel may result in cancer; dermal contact may result in dermatitis in sensitive individuals.

Medical Conditions Aggravated by Overexposure:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

Emergency and First Aid Procedures:

Swallowing:

Do not induce vomiting. Seek medical attention immediately.

Skin:

If the internal cell materials of an opened battery cell come into contact with the skin, immediately flush with water for at least 15 minutes.

Inhalation:

If potential for exposure to fumes or dusts occurs, remove immediately to fresh air and seek medical attention.

Eyes:

If the contents from an opened battery come into contact with the eyes, immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention.

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6. Reactivity Data

Stability:

The batteries are stable under normal operating conditions.

Hazardous polymerization:

Hazardous polymerization will not occur.

Hazardous decomposition products:

Oxides of nickel, cobalt, manganese, lanthanum, and cerium.

Conditions to avoid:

Heat, open flames, sparks, and moisture.

Potential incompatibilities (i.e., materials to avoid contact with):

The battery cells are encased in a non-reactive container; however, if the container is breached, avoid contact of internal battery components with acids, aldehydes, and carbamate compounds.

7. Spill and Leak Procedures

Spill and leaks are unlikely because cells are contained in a hermetically-sealed case. If the battery case is breached, use protective clothing that is impervious to caustic materials and absorb or pack spill residues in inert material. Dispose in accordance with applicable state and federal regulations.

8. Safe Handling and Use (Personal Protective Equipment)

Ventilation Requirements:

Not required under normal use.

Respiratory Protection:

Not required under normal use.

Eye Protection:

Not required under normal use.

Gloves:

Not required under normal use.

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9. Precautions for Safe Handling and Use

Storage:

Store in a cool place, but prevent condensation on cell or battery terminals. Elevated temperatures may result in reduced battery life. Optimum storage temperatures are between 0°C and 35°C.

Mechanical Containment:

If there is special encapsulation or sealing requirements, consult us about possible cell hazard precautions or limitations.

Handling:

Accidental short circuit will bring high temperature elevation to the battery as well as shorten the battery life. Be sure to avoid prolonged short circuit since the heat can burn attendant skin and even rupture of the battery cell case. Batteries packaged in bulk containers should not be shaken. Metal covered tables or belts used for assembly of batteries into devices can be the source of short circuits; apply insulating material to assembly work surface. If soldering or welding to the case of the battery is required, consult us for proper precautions to prevent seal damage or external short circuit.

Charging:

This battery is designed for recharging. A loss of voltage and capacity of batteries due to self-discharge during prolonged storage is unavoidable. Charge battery before use. Observe the specified charge rate since higher rates can cause a rise in internal gas pressure that may result in damaging heat generation or cell rupture and/or venting.

Labeling:

If normal label warnings are not visible, it is important to provide a device label stating:

CAUTION: 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.

10. Recycling and Disposal

We encourage battery recycling. Our Nickel Metal Hydride batteries are not defined by the local government as hazardous waste and are safe for disposal in the normal municipal waste stream.

DO NOT INCINERATE or subject battery cells to temperatures in excess of 100°C. Such treatment can cause cell rupture.

11. Transportation

1. Batteries, dry fill fills the requirement of U.S Department of Transportation (DOT), Special Provision 130, i.e. They are offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals or batteries to be packed in such a way to prevent short circuits or generation of a dangerous quantity of heat. International Air Transportation Association (IATA) Dangerous Goods Regulations, DGR 60th.

2. International Civil Aviation Administration (ICAO) and International Air Transport Association (IATA), Special Provisions A199 An electrical battery or battery powered device having the potential of dangerous evolutions of heat that is not prepared so as 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 or batteries to be packed in such a way to prevent short circuit or generation of a dangerous quantity of heat, is forbidden from transportation.

3. International Maritime Dangerous Goods Regulations (IMDG), Special provisions 304, i.e. 2010 edition does not regulate these batteries, i.e. " this entry may only be used for the transport of non-activated batteries which contain dry potassium hydroxide and which are intended to be activated prior to use by the addition of an appropriate amount of water to be the individual cells"

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12. First Aid Measures

First Aid Procedures:

If electrolyte leakage occurs and makes contact with skin, please wash it with plenty of water immediately;

If electrolyte comes into contact with eyes, wash eyes with copious amount of water for 15 minutes and contact a physician;

If electrolyte vapor is inhaled, move to fresh air and seek medical attention if respiratory irritation develops, ventilate the contaminated area

13. Ecological Information

N. A.

14. Regulatory Information

Special requirements according to the local regulatory.

15. Other Information

Symbol: N/A

EC labeling: None

Risk phrases: None

Safety phrases: None

16. Measures for Fire Extinction

In case of fire, it is permissible to use any class of extinguishing medium on these batteries or their pack material. Cool exterior if exposed to fire to prevent rupture.

Fire fighters should wear self-contained breathing apparatus