

Material Safety Data Sheet

1. Product & Company Identification

| | |
|--------------------------|----------------------------------------------|
| Product: | NiMH rechargeable battery (type 3032-C1-R10) |
| Manufacturer: | Conrad Electronic SE |
| Nominal voltage: | 3,6 V |
| Nominal capacity: | 170 mAh |
| Address: | Klaus-Conrad-Str. 1, D-92240 Hirschau |
| Telephone: | +49 (0) 9604 / 40 - 8988 |
| Date of issue: | 17.03.2014 |

2. Hazardous Ingredients

IMPORTANT NOTICE: 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.

| | CAS No. | PEL | TLV |
|-----------------|---------|------------------|------------------|
| NiOH | | None Established | None Established |
| Hydrogen Powder | | None Established | None Established |
| KOH | | None Established | None Established |

According to the European directive 2001/58/EC & 98/101/EC

| Element: | Limit | Directive |
|----------|---------|-----------|
| Mercury | 0.0005% | <0.0001% |
| Cadmium | 0.025% | <0.007% |
| Lead | 0.4% | <0.004% |

3. Composition/Information on Ingredients

| COMPONENTS | %WEIGHT | COMPONENTS | %WEIGHT |
|--------------------------|-----------|--------------------------------------------------------------|-----------|
| Nickel, Nickel hydroxide | About 32% | Hydrogen absorbing alloy (Ni, La, Ce, Pr, Nd, Mn, Al, Co) | About 38% |
| Cobalt | About 3% | Iron | About 10% |
| Potassium hydroxide | About 4% | Nylon | About 3% |
| PP fiber Separator | About 8% | Other | About 2% |

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4. First Aid Measures

Inhalation:

In case of excessive inhalation due to leaking batteries remove to fresh air. Obtain medical advice.

Skin contact:

If exposed to a leaking battery, remove contaminated clothing. Wash exposed areas with plenty of water and soap. If irritation occurs, consult a physician.

Eye contact:

If a battery is leaking and materials contact eyes, flush immediately with running water for at least 15 minutes. Consult an ophthalmologist at once.

Ingestion:

Not anticipated due to size of batteries. Choking may occur with the smaller size batteries. If exposed to a leaking battery, rinse mouth and surrounding areas with running water for at least 15 minutes. Give plenty of water to drink, Do not induce vomiting. Obtain medical advice.

5. Fire Fighting Measures

Suitable extinguishing media:

Carbon dioxide (CO₂), foam, dry chemical powder.

Extinguishing media not to be used:

Never use a direct water jet.

Exposure hazards from combustion products:

In case of fire, Carbon dioxide, Carbon monoxide and toxic organic substances will be generated. Do not inhale fumes and smoke.

Personal protective equipments:

Wear full protective clothing. Use self-contained apparatus.

6. Accidental Release Measures

Personal precautions:

Notify safety personnel of large. Caustic potassium hydroxide may be released from leaking or ruptured batteries, Avoid eye or skin contact and inhalation of vapours. Increase the ventilation. Wear protective clothing. Keep unprotected person away.

Environmental precautions:

Avoid discharge and penetration into sewerage systems, waterways, pits and cellars.

Methods for cleaning up:

Collect spilled material with an inert standard absorbent like sand or silica. Care for well-ventilated conditions. Recycle or dispose of the materials in an appropriate way.

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7. Handling and Storage

General handling:

Obey the common known rules and precautions for handling with chemicals. Avoid mechanical and electrical abuse. Do not short battery or install incorrectly. Batteries may explode, pyrolize or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries according to equipment instructions. Do not mix battery systems, such as alkaline and zinc-carbon. Replace all batteries in equipment at the same time. Do not carry batteries loose in pocket or bag. Do not remove battery labels.

Storage:

Store product in well-filled, appropriate coated and tightly closed containers avoiding influence of oxygen/air, light and humidity. Store at -20~35°C.

8. Exposure Controls/Personal Protection

Exposition/Technical measures:

Atmospheric vapour concentrations must be minimized by adequate ventilation.

Protection of hands, eye and skin:

None required under normal use conditions. When handling leaking batteries, use neoprene, rubber or nitrile gloves and wear safety glasses to protect hands, eyes and skin.

General safety and hygiene measures:

Use only as directed.

9. Physical and Chemical Properties

| COMPONENTS | DENSITY (g/cm3) | MELTING POINT | SOLUBILITY (H ₂ O) | ODOR | APPEARANCE |
|----------------------------|-----------------|---------------|-------------------------------|------|------------------------|
| Nickel | 8.0 | About 1200°C | None | None | Sliver-Gray Metal |
| Nickel hydroxide | 4.3 | N/A | None | None | green Powder |
| Hydrogen absorbing alloy | 8.2 | About 1200°C | None | None | Gray black Powder |
| Cobalt | 8.0 | About 1200°C | None | None | Gray black Powder |
| Iron | 7.8 | About 1200°C | None | None | Sliver-white Metal |
| potassium hydroxide liquid | About 1.3 | N/A | 100% | None | Clear Colorless Liquid |
| PP fiber Separator | 0.92 | 165°C | None | None | White fabric |
| Nylon | 1.15 | 260°C | None | None | White solid |

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10. Stability and Reactivity

Thermal decomposition:

Batteries may burst and release hazardous decomposition products when exposed to fire.

Substances to avoid:

Strong oxidation agents.

Hazardous reactions:

Contents incompatible with strong oxidising agents.

Hazardous decomposition products:

Thermal degradation may produce hazardous fumes of zinc manganese; hydrogen gas; caustic of potassium hydroxide and other toxic by-products.

11. Toxicological Information

Toxicity information is available on the battery ingredients noted in section 2, but in general, not applicable to intact batteries.

Chronic health effects:

Not applicable to intact batteries.

12. Ecological Informations

Not available.

13. Disposal Considerations

Product: Dispose in accordance with appropriate regulations. If in doubt, contact your local government office concerned for information. Do not incinerate, since batteries may explode at excessive temperatures.

14. Transport Information

Our sealed Ni-MH batteries are considered to be "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 Administration (ICAO), the international Air Transport Association (IATA) or the international Maritime Dangerous Goods regulations (IMDG).

The only IATA requirement for shipping Ni-MH batteries is Special Provision A123 which states: "Batteries, dry cells 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.

15. Regulatory Information

| | |
|-----------------|------|
| Symbol: | N/A |
| EC labeling: | None |
| Risk phrases: | None |
| Safety phrases: | None |

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16. Other information

It is the user's responsibility to assume liability on loss, injury, damage, or expense resulting from improper use of this product.

Any previous MSDS of this product mentioned above are hereby replaced with this new document. We urge you to make this information available as appropriate in your organization and to any others with whom you arrange to handle this product.