

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

**Trade name: Nickel Metallhydrid Akku /Akku-Pack (NiMH)**

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Application of the substance / the mixture** Rechargeable battery

### 1.3 Details of the supplier of the safety data sheet

**Manufacturer/Supplier:**

**Tridonic GmbH & Co KG**

Färbergasse 15

6850 Dornbirn

Austria

Tel: +43 5572 395-0

sales@tridonic.com

**Further information obtainable from:**

Gerhard Radl

gerhard.radl@tridonic.com

### 1.4 Emergency telephone number:

+43 5572 395-0

Available during office hours:

Mo - Fr 8.00 - 16.00 h

**Call the national emergency number!**

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008**

The product is not classified, according to the CLP regulation.

**Additional information:**

The product itself is declared as an article and is not subject to the provisions of classification in sense of the regulation (EC) No. 1272/2008.

### 2.2 Label elements

**Labelling according to Regulation (EC) No 1272/2008** Void

**Hazard pictograms** Void

**Signal word** Void

**Hazard statements** Void

**Additional information:**

The product itself is declared as an article and is not subject to the provisions of labeling in sense of the regulation (EC) No. 1272/2008.

### 2.3 Other hazards

NiMH batteries are gas-tight and harmless if the manufacturer's instructions are observed during use and handling.

Never use chargers that are not suitable for the type of battery with rechargeable batteries. The limits for maximum current load, charging and discharging voltage must be strictly adhered to! Do not short-circuit. Do not damage mechanically (pierce, deform, disassemble, etc.). Do not heat or burn above the permissible temperature. Keep batteries away from small children. Always store batteries in a dry and cool

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place.

NiMH batteries are safe to use when used properly and within the parameters specified by the manufacturer. Incorrect handling or circumstances resulting in improper operation may result in leakage of battery contents and decomposition products, resulting in severe reactions hazardous to health and the environment. In principle, contact with leaked battery components can pose a risk to health and the environment. Sufficient body and respiratory protection is therefore required in contact with conspicuous batteries (leakage of contents, deformation, discoloration, dents, etc.). NiMH batteries can react very violently in combination with fire, for example. Battery components with considerable energy can be emitted.

As with other batteries, NiMH batteries can continue to be a source of danger even when they are supposedly discharged.

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.













**SECTION 3: Composition/information on ingredients**

**3.2 Mixtures**

**Description:**

Rechargeable NiMH batteries are products from which no substance is released when used properly.














**Dangerous components:**

CAS: 7440-02-0 EINECS: 231-111-4 Index number: 028-002-00-7	nickel  Carc. 2, H351; STOT RE 1, H372  Skin Sens. 1, H317	10 – 55%
CAS: 1313-99-1 EINECS: 215-215-7 Index number: 028-003-00-2	nickel monoxide  Resp. Sens. 1, H334; Carc. 1A, H350i; STOT RE 1, H372  Aquatic Chronic 2, H411  Acute Tox. 4, H332; Skin Sens. 1, H317	0 – 55%
CAS: 12054-48-7 EINECS: 235-008-5 Index number: 028-008-00-X	nickel dihydroxide  Resp. Sens. 1, H334; Muta. 2, H341; Carc. 1A, H350i; Repr. 1B, H360D; STOT RE 1, H372  Aquatic Acute 1, H400; Aquatic Chronic 1, H410  Acute Tox. 4, H302; Acute Tox. 4, H332; Skin Irrit. 2, H315; Skin Sens. 1, H317	0 – 55%
CAS: 11104-61-3 EINECS: 234-334-5	Cobalt oxide  Acute Tox. 3, H301; Acute Tox. 2, H330  Resp. Sens. 1, H334; Carc. 2, H351; Repr. 1B, H360  Aquatic Acute 1, H400 (M=10); Aquatic Chronic 1, H410 (M=10)  Skin Sens. 1, H317	≤ 8.3%

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CAS: 7439-96-5 EINECS: 231-105-1	manganese substance with a Community workplace exposure limit	0 – 8%
CAS: 1310-58-3 EINECS: 215-181-3 Index number: 019-002-00-8	potassium hydroxide  Met. Corr. 1, H290; Skin Corr. 1A, H314  Acute Tox. 4, H302 Specific concentration limits: Skin Corr. 1A; H314: C ≥ 5 % Skin Corr. 1B; H314: 2 % ≤ C < 5 % Skin Irrit. 2; H315: 0.5 % ≤ C < 2 % Eye Irrit. 2; H319: 0.5 % ≤ C < 2 % Met. Corr. 1; H290: C ≥ 0.1 %	< 7.0%
CAS: 7440-48-4 EINECS: 231-158-0 Index number: 027-001-00-9	cobalt  Resp. Sens. 1, H334; Carc. 1A, H350i; Repr. 2, H361  Acute Tox. 4, H302; Skin Sens. 1, H317 Aquatic Chronic 4, H413	< 6.0%
CAS: 21041-93-0 EINECS: 244-166-4	Cobalt dihydroxide  Acute Tox. 1, H330  Resp. Sens. 1B, H334; Carc. 1B, H350; Repr. 1B, H360  Aquatic Acute 1, H400 (M=10); Aquatic Chronic 2, H411  Acute Tox. 4, H302; Eye Irrit. 2, H319; Skin Sens. 1, H317	< 6.0%
CAS: 1310-73-2 EINECS: 215-185-5 Index number: 011-002-00-6	sodium hydroxide  Met. Corr. 1, H290; Skin Corr. 1A, H314 Specific concentration limits: Skin Corr. 1A; H314: C ≥ 5 % Skin Corr. 1B; H314: 2 % ≤ C < 5 % Skin Irrit. 2; H315: 0.5 % ≤ C < 2 % Eye Dam. 1; H318: C ≥ 2 % Eye Irrit. 2; H319: 0.5 % ≤ C < 2 % Met. Corr. 1; H290: C ≥ 0.1 %	≤ 4.0%
CAS: 1310-65-2 EINECS: 215-183-4 Reg.nr.: 01-2119560576-31-XXXX	lithium hydroxide  Skin Corr. 1B, H314  Acute Tox. 4, H302	0 – 4%
CAS: 31175-20-9 EC number: 680-985-7	ethanesulfonic acid, 2-[1-[difluoro[(1,2,2-trifluoroethenyl)oxy]methyl]-1,2,2,2-tetrafluoroethoxy]-1,1,2,2-tetrafluoro-, polymer with 1,1,2,2-tetrafluoroethene  Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	≤ 3.2%
CAS: 1314-13-2 EINECS: 215-222-5 Index number: 030-013-00-7	zinc oxide  Aquatic Acute 1, H400; Aquatic Chronic 1, H410	< 3.0%

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CAS: 7440-66-6 EINECS: 231-175-3	zinc - massive substance with a Community workplace exposure limit	< 3.0%
CAS: 7429-90-5 EINECS: 231-072-3	aluminium substance with a Community workplace exposure limit	< 2.0%

**Additional information:** For the wording of the listed hazard phrases refer to section 16.

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

**General information:**

In normal cases no specific measures needed.

It always applies:

In case of discomfort or doubt, seek medical advice.

If unconscious, use a stable lateral position and do not administer anything through mouth.

The following measures apply to contact with the contents of a damaged battery:

**After inhalation:**

Supply fresh air; consult doctor in case of complaints.

In case of unconsciousness place patient stably in side position for transportation.

**After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

Take off contaminated clothing and wash it before reuse.

Seek medical treatment in case of complaints.

**After eye contact:**

Rinse opened eye for several minutes under running water.

Remove contact lenses, if present and easy to do. Continue rinsing.

Consult an ophthalmologist or eye clinic immediately.

**After swallowing:**

Rinse mouth thoroughly with cold water. Do not induce vomiting. If the patient is fully conscious, give one or two glass of water to drink. Get medical attention immediately.

**4.2 Most important symptoms and effects, both acute and delayed**

No further relevant information available.

**4.3 Indication of any immediate medical attention and special treatment needed**

Depending on the condition of the patients, the doctor must assess the symptoms and the overall general condition.

**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**

**Suitable extinguishing agents:**

CO<sub>2</sub>, foam, dry extinguishing agent

Dry sand

**For safety reasons unsuitable extinguishing agents:** Water with full jet

**5.2 Special hazards arising from the substance or mixture**

Batteries may burst at high temperatures, which may result in flammable, toxic and/or corrosive vapours.

In case of fire, the following can be released:

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COx

carcinogenic nickel- und cobalt oxides

**5.3 Advice for firefighters**

**Protective equipment:**

Wear self-contained respiratory protective device.

Wear fully protective suit.

**Additional information**

Remove container from fire, if possible without risk.

Cool endangered receptacles with water spray.

Ensure adequate ventilation.

**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

Restricted access to the affected area until cleaning work is completed.

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Avoid skin and eye contact with damaged batteries.

**6.2 Environmental precautions:**

Do not allow to enter sewers/ surface or ground water.

Inform respective authorities in case of seepage into water course or sewage system.

**6.3 Methods and material for containment and cleaning up:**

Cover leaked material with inert absorbent material (sand or soil) and dispose of in suitable containers.

Clean again.

**6.4 Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types. Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access. Unpacked batteries shall not lie about in bulk. In case of battery change always replace all batteries by new ones of identical type and brand. Do not swallow batteries. Do not throw batteries into water. Do not throw batteries into fire. Avoid deep discharge. Do not short-circuit batteries Use recommended charging time and current.

Observe protective measures and safety instructions.

**Information about fire - and explosion protection:**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

**7.2 Conditions for safe storage, including any incompatibilities**

**Storage:**

**Requirements to be met by storerooms and receptacles:**

Store in dry conditions.

Store in a cool location.

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Protect from heat and direct sunlight.

Store in accordance with local/regional/national/international regulations.

**Information about storage in one common storage facility:**

Store away from oxidising agents.

Do not store together with acids.

**Further information about storage conditions:**

Protect against moisture.

Do not storage the Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

**Recommended storage temperature:** room temperature

**Storage class:** 11

**7.3 Specific end use(s)** No further relevant information available.

**\* SECTION 8: Exposure controls/personal protection**

**Additional information about design of technical facilities:**

No further data; see item 7.

Technical measures and the use of suitable working methods take priority over the use of personal protective equipment.

**8.1 Control parameters**

NiMH batteries are products from which no substances are released under normal and reasonably foreseeable conditions of use.

**Ingredients with limit values that require monitoring at the workplace:**

**CAS: 7440-02-0 nickel**

MAK (Austria)	siehe Anhang III A 1
TRK (Austria)	Short-term value: 2E; 0.2E* mg/m <sup>3</sup> Long-term value: 0.5E; 0.05E* mg/m <sup>3</sup> Stäube; *einatembare Tröpfchen; als Ni
AGW (Germany)	Long-term value: 0.006A; 0.030E* mg/m <sup>3</sup> 8(II);AGS, 24, Sh, Y, 10*, 31*
LEP (Spain)	Long-term value: 1 mg/m <sup>3</sup> Sen, r
VLEP (France)	Long-term value: 1 mg/m <sup>3</sup> C2
WEL (Great Britain)	Long-term value: 0.5 mg/m <sup>3</sup> as Ni; Sk; Carc
TWA (Italy)	Long-term value: 1.5 mg/m <sup>3</sup> A5, (i)

**CAS: 1313-99-1 nickel monoxide**

TRK (Austria)	Short-term value: 2E; 0.2E* mg/m <sup>3</sup> Long-term value: 0.5E; 0.05E* mg/m <sup>3</sup> Stäube; *einatembare Tröpfchen; als Ni
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AGW (Germany)	Long-term value: 0.030E mg/m <sup>3</sup> 8(II);AGS, Sh, Y, 10, 24, 31
TRGS 910 (Germany)	Short-term value: 0.006 (A) mg/m <sup>3</sup> Long-term value: 0.006 (A) mg/m <sup>3</sup> 8, Konzentrationen beziehen sich auf Ni-Gehalt
LEP (Spain)	Long-term value: 0.2 mg/m <sup>3</sup> C1, c, Sen, r, como Ni
VLEP (France)	Long-term value: 1 mg/m <sup>3</sup> C1A
WEL (Great Britain)	Long-term value: 0.5 mg/m <sup>3</sup> as Ni; Sk; Carc
<b>CAS: 12054-48-7 nickel dihydroxide</b>	
TRK (Austria)	Short-term value: 2E; 0.2E* mg/m <sup>3</sup> Long-term value: 0.5E; 0.05E* mg/m <sup>3</sup> Stäube; *einatembare Tröpfchen; als Ni
AGW (Germany)	Long-term value: 0.030E mg/m <sup>3</sup> 8(II);AGS, Sh, Y, 10, 24, 31
TRGS 910 (Germany)	Short-term value: 0.006 (A) mg/m <sup>3</sup> Long-term value: 0.006 (A) mg/m <sup>3</sup> 8, Konzentrationen beziehen sich auf Ni-Gehalt
VLEP (France)	Long-term value: 1 mg/m <sup>3</sup> C1A, M2, R1B
WEL (Great Britain)	Long-term value: 0.5 mg/m <sup>3</sup> as Ni; Sk; Carc
<b>CAS: 7439-96-5 manganese</b>	
IOELV (EU)	Long-term value: 0.2* 0.05** mg/m <sup>3</sup> as Mn; *inhalable, **respirable fraction
MAK (Austria)	Short-term value: 1.6 E, 0.16 A mg/m <sup>3</sup> Long-term value: 0.2 E, 0.05 A mg/m <sup>3</sup> Als Mn berechnet
AGW (Germany)	Long-term value: 0.02A; 0.2E mg/m <sup>3</sup> 8(II);DFG,Y,10, 20
LEP (Spain)	Long-term value: 0.2* 0.05** mg/m <sup>3</sup> VLI, *inhalable, **respirable: d
WEL (Great Britain)	Long-term value: 0.2* 0.05** mg/m <sup>3</sup> as Mn *inhalable fraction **respirable fraction
TWA (Italy)	Long-term value: (0.2) mg/m <sup>3</sup> (come Mn)
WGW (Netherland)	Long-term value: 0.2* 0.05** mg/m <sup>3</sup> als Mn; *inhaleerbaar **respirabel
<b>CAS: 1310-58-3 potassium hydroxide</b>	
MAK (Austria)	Long-term value: 2 E mg/m <sup>3</sup>

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LEP (Spain)	Short-term value: 2 mg/m <sup>3</sup>
VLEP (France)	Short-term value: 2 mg/m <sup>3</sup>
WEL (Great Britain)	Short-term value: 2 mg/m <sup>3</sup>
TWA (Italy)	Ceiling limit: 2 mg/m <sup>3</sup>
<b>CAS: 7440-48-4 cobalt</b>	
MAK (Austria)	siehe Anhang III A 2
TRK (Austria)	Short-term value: 0.4E; 2E* mg/m <sup>3</sup> Long-term value: 0.1E; 0.5E* mg/m <sup>3</sup> *Pulveraufarbeitung, mechanische Bearbeitung
MAK (Germany)	einatembare Fraktion; vgl.Abschn.XIII
LEP (Spain)	Long-term value: 0.02 mg/m <sup>3</sup> VLB, Sen, Como Co
WEL (Great Britain)	Long-term value: 0.1 mg/m <sup>3</sup> as Co; Carc, Sen
TWA (Italy)	Long-term value: 0.02 mg/m <sup>3</sup> A3, IBE (come Co)
WGW (Netherland)	Long-term value: 0.02 mg/m <sup>3</sup> stof en rook (als Co)
<b>CAS: 1310-73-2 sodium hydroxide</b>	
MAK (Austria)	Short-term value: 4 E mg/m <sup>3</sup> Long-term value: 2 E mg/m <sup>3</sup>
MAK (Germany)	vgl.Abschn.IIb
LEP (Spain)	Short-term value: 2 mg/m <sup>3</sup>
VLEP (France)	Long-term value: 2 mg/m <sup>3</sup>
WEL (Great Britain)	Short-term value: 2 mg/m <sup>3</sup>
TWA (Italy)	Ceiling limit: 2 mg/m <sup>3</sup>
<b>CAS: 1310-65-2 lithium hydroxide</b>	
MAK (Germany)	vgl. Abschn. IIb
WEL (Great Britain)	Short-term value: 1 mg/m <sup>3</sup>
<b>CAS: 1314-13-2 zinc oxide</b>	
MAK (Austria)	Long-term value: 5 A mg/m <sup>3</sup>
MAK (Germany)	Long-term value: 1A mg/m <sup>3</sup> Rauch
LEP (Spain)	Short-term value: 10* mg/m <sup>3</sup> , 2* ppm *Fracción respirable: d
VLEP (France)	Long-term value: 5* 10** mg/m <sup>3</sup> *fumées **poussières
TWA (Italy)	Short-term value: 10 mg/m <sup>3</sup> Long-term value: 2 mg/m <sup>3</sup> (j)

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**Trade name: Nickel Metallhydrid Akku /Akku-Pack (NiMH)**

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<b>CAS: 7440-66-6 zinc - massive</b>	
MAK (Germany)	Long-term value: 0.1A* 2E** mg/m <sup>3</sup> *alveolengängig; **einatembar
<b>CAS: 7429-90-5 aluminium</b>	
MAK (Austria)	Short-term value: 20 E mg/m <sup>3</sup> Long-term value: 10 E mg/m <sup>3</sup> (als Metall)
AGW (Germany)	Long-term value: 1.25* 10** mg/m <sup>3</sup> 2(II);*alveolengängig**einatembar; AGS, DFG
LEP (Spain)	Long-term value: 10 5* mg/m <sup>3</sup> *Humos de soldadura, Polvos aluminotermia; como Al
VLEP (France)	Long-term value: 5* 10** mg/m <sup>3</sup> *pulvérulent **métal
WEL (Great Britain)	Long-term value: 10* 4** mg/m <sup>3</sup> *inhalable dust **respirable dust
TWA (Italy)	Long-term value: 1 mg/m <sup>3</sup> A4, (j); metallico e composti insolubili
WGW (Netherland)	Long-term value: 0.05* mg/m <sup>3</sup> *Metaal en onoplosbare verb., inadembaar (privaat)

**Regulatory information**

MAK (Austria): GKV 2018, 254. Verordnung, 24.9.2018, Teil II

AGW (Germany): TRGS 900

LEP (Spain): Límites de exposición profesional para agentes químicos

VLEP (France): ED 984, 10.2016

WEL (Great Britain): EH40/2018

TWA (Italy): Valori Limite di Soglia

IOELV (EU): (EU) 2017/164

WGW (Netherland): Grenswaarden gezondheidsschadelijke stoffen

MAK (Germany): MAK- und BAT-Liste

**DNELs**

**CAS: 7440-02-0 nickel**

Oral	Long-term exposure - systemic effects	0.011 mg/kg bw/d (consumer)
	short-term exposure - systemic effects	0.37 mg/kg bw (consumer)
Dermal	Long-term exposure - local effects	0.035 mg/cm <sup>2</sup> (consumer) 0.035 mg/cm <sup>2</sup> (workers)
	Inhalative	Long-term exposure - systemic effects
Long-term exposure - local effects		0.00006 mg/m <sup>3</sup> (consumer) 0.05 mg/m <sup>3</sup> (workers)
short-term exposure - local effects		0.8 mg/m <sup>3</sup> (consumer) 11.9 mg/m <sup>3</sup> (workers)

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<b>CAS: 7439-96-5 manganese</b>		
Dermal	Long-term exposure - systemic effects	0.002 mg/kg bw/d (consumer) 0.004 mg/kg bw/d (workers)
Inhalative	Long-term exposure - systemic effects	0.041 mg/m <sup>3</sup> (consumer) 0.2 mg/m <sup>3</sup> (workers)
	Long-term exposure - local effects	0.041 mg/m <sup>3</sup> (consumer) 0.2 mg/m <sup>3</sup> (workers)
<b>CAS: 1310-58-3 potassium hydroxide</b>		
Inhalative	Long-term exposure - systemic effects	1 mg/m <sup>3</sup> (workers)
	Long-term exposure - local effects	1 mg/m <sup>3</sup> (consumer)
<b>CAS: 7440-48-4 cobalt</b>		
Oral	Long-term exposure - systemic effects	0.0298 mg/kg bw/d (consumer)
Inhalative	Long-term exposure - local effects	0.0063 mg/m <sup>3</sup> (consumer) 0.04 mg/m <sup>3</sup> (workers)
<b>CAS: 1310-73-2 sodium hydroxide</b>		
Inhalative	Long-term exposure - local effects	1 mg/m <sup>3</sup> (consumer) 1 mg/m <sup>3</sup> (workers)
<b>CAS: 1314-13-2 zinc oxide</b>		
Oral	Long-term exposure - systemic effects	0.83 mg/kg bw/d (consumer)
Dermal	Long-term exposure - systemic effects	83 mg/kg bw/d (consumer) 83 mg/kg bw/d (workers)
Inhalative	Long-term exposure - systemic effects	2.5 mg/m <sup>3</sup> (consumer) 5 mg/m <sup>3</sup> (workers)
	Long-term exposure - local effects	0.5 mg/m <sup>3</sup> (workers)
<b>CAS: 7440-66-6 zinc - massive</b>		
Oral	Long-term exposure - systemic effects	0.83 mg/kg bw/d (consumer)
Dermal	Long-term exposure - systemic effects	83 mg/kg bw/d (consumer) 83 mg/kg bw/d (workers)
Inhalative	Long-term exposure - systemic effects	2.5 mg/m <sup>3</sup> (consumer) 5 mg/m <sup>3</sup> (workers)
<b>CAS: 7429-90-5 aluminium</b>		
Oral	Long-term exposure - systemic effects	7.9 mg/kg bw/d (consumer)
Inhalative	Long-term exposure - systemic effects	3.72 mg/m <sup>3</sup> (workers)
	Long-term exposure - local effects	3.72 mg/m <sup>3</sup> (workers)
<b>PNECs</b>		
<b>CAS: 7440-02-0 nickel</b>		
fresh water		7.1 µg/l
sea water		8.6 µg/l

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**Trade name: Nickel Metallhydrid Akku /Akku-Pack (NiMH)**

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STP	0.33 mg/l
sediment (fresh water)	109 mg/kg dw
sediment (sea water)	109 mg/kg dw
soil	29.9 mg/kg dw
oral	0.12 mg/kg food
<b>CAS: 7439-96-5 manganese</b>	
fresh water	0.034 mg/l
sea water	0.003 mg/l
STP	100 mg/l
sediment (fresh water)	3.3 mg/kg dw
sediment (sea water)	0.34 mg/kg dw
soil	3.4 mg/kg dw
<b>CAS: 7440-48-4 cobalt</b>	
fresh water	0.6 µg/l
sea water	2.36 µg/l
STP	0.37 mg/l
sediment (fresh water)	9.5 mg/kg dw
sediment (sea water)	9.5 mg/kg dw
soil	10.9 mg/kg dw
<b>CAS: 1314-13-2 zinc oxide</b>	
fresh water	20.6 µg/l
sea water	6.1 µg/l
STP	0.1 mg/l
sediment (fresh water)	117.8 mg/kg dw
sediment (sea water)	56.5 mg/kg dw
soil	35.6 mg/kg dw
<b>CAS: 7440-66-6 zinc - massive</b>	
fresh water	20.6 µg/l
sea water	6.1 µg/l
STP	0.1 mg/l
sediment (fresh water)	235.6 mg/kg dw
sediment (sea water)	121 mg/kg dw
soil	106.8 mg/kg dw

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<b>Ingredients with biological limit values:</b>	
<b>CAS: 7439-96-5 manganese</b>	
BGW (Germany)	20 µg/l Untersuchungsmaterial: Vollblut Probennahmezeitpunkt: bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten, Expositionsende bzw. Schichtende Parameter: Mangan
<b>CAS: 7440-48-4 cobalt</b>	
VLB (Spain)	15 µg/l Muestra: en orina Momento de Muestero: Final de la semana laboral Indicador Biológico: Cobalto
	1 µg/l Muestra: en sangre Momento de Muestero: Final de la semana laboral Indicador Biológico: Cobalto
IBE (Italy)	15 µg/l Campioni: urine Momento del prelievo: a fine turno a fine settimana lavorativa Indicatore biologico: cobalto
	1 µg/l Campioni: sangue Momento del prelievo: a fine turno a fine settimana lavorativa Indicatore biologico: cobalto
<b>CAS: 7429-90-5 aluminium</b>	
BGW (Germany)	50 µg/g Kreatinin Untersuchungsmaterial: Urin Probennahmezeitpunkt: bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten Parameter: Aluminium

**Regulatory information**

BGW (Germany): TRGS 903

VLB (Spain): Límites de exposición profesional para agentes químicos

IBE (Italy): Indici Biologici di Esposizione

**Additional information:** The lists valid during the making were used as basis.

**8.2 Exposure controls**

**Personal protective equipment:**

**General protective and hygienic measures:**

The usual precautionary measures are to be adhered to when handling chemicals.

Keep away from foodstuffs, beverages and feed.

Do not eat or drink while working.

Avoid skin and eye contact with damaged batteries.

Avoid inhalation of spilled material.

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Take off contaminated clothing and wash it before reuse.

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye wash bottles and emergency showers should be provided in the immediate area near the workplace.

**Respiratory protection:** Not required when handling undamaged batteries.

**Protection of hands:**

Not required when handling undamaged batteries.

Wear protective gloves made of chloroprene or rubber if batteries are damaged.

**Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

**Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Eye protection:**

Not required when handling undamaged batteries.

Wear protective goggles if batteries are damaged.

**Body protection:** Not required when handling undamaged batteries.

**Limitation and supervision of exposure into the environment**

Do not allow to enter sewers/ surface or ground water.

**SECTION 9: Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

**General Information**

**Appearance:**

<b>Form:</b>	Solid
<b>Colour:</b>	Various colours
<b>Odour:</b>	Odourless
<b>Odour threshold:</b>	No information available.

**pH-value:** Not applicable.

**Change in condition**

<b>Melting point/freezing point:</b>	No information available.
<b>Initial boiling point and boiling range:</b>	No information available.

**Flash point:** Not applicable.

**Flammability (solid, gas):** Not determined.

**Decomposition temperature:** No information available.

**Auto-ignition temperature:** 130 °C

**Explosive properties:** No information available.

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(Contd. of page 13)

**Explosion limits:**

**Lower:** No information available.

**Upper:** No information available.

**Oxidising properties** No information available.

**Vapour pressure:** Not applicable.

**Density:** No information available.

**Vapour density** Not applicable.

**Evaporation rate** Not applicable.

**Solubility in / Miscibility with water:** Insoluble.

**Partition coefficient: n-octanol/water:** No information available.

**Viscosity:**

**Dynamic:** Not applicable.

**Kinematic:** Not applicable.

**9.2 Other information** No further relevant information available.

**SECTION 10: Stability and reactivity**

**10.1 Reactivity** No hazardous reactions known if stored and used as prescribed.

**10.2 Chemical stability** No decomposition if used and stored according to specifications.

**10.3 Possibility of hazardous reactions**

When heated above 150°C the risk of rupture occurs. Due to special safety construction, rupture implies cont release of pressure without ignition.

**10.4 Conditions to avoid**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Do not expose the rechargeable battery to mechanical shock.

Do not disassemble, crush, short-circuit, or connect with incorrect polarity. Avoid mechanical or electrical abuse.

**10.5 Incompatible materials:**

strong oxidizing agents

strong acids

**10.6 Hazardous decomposition products:** In case of fire: see section 5

\* **SECTION 11: Toxicological information**

**11.1 Information on toxicological effects**

**Inhalation:** No probable route of exposure of the product itself. Inhalation of substances leaked from damaged batteries may irritate the respiratory tract and damage organs during prolonged or repeated exposure.

**Skin contact:** Contact with the undamaged battery does not present a hazard. Skin contact with damaged batteries may cause burns.

**Eye contact:** Contact with the undamaged battery does not constitute a hazard. Eye contact with spills

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**Trade name: Nickel Metallhydrid Akku /Akku-Pack (NiMH)**

(Contd. of page 14)

from the damaged battery may cause burns.

**Ingestion:** No probable route of exposure of the product itself. Ingestion of spills may cause burns to the esophagus and stomach. Harmful if swallowed.

The product is declared as a product and is not subject to the CLP classification and labelling requirements.

**Acute toxicity** Based on available data, the classification criteria are not met.

**LD/LC50 values relevant for classification:**

**CAS: 7440-02-0 nickel**

Oral	LD50	> 9,000 mg/kg (rat)
------	------	---------------------

**CAS: 7439-96-5 manganese**

Oral	LD50	9,000 mg/kg (rat)
------	------	-------------------

**CAS: 1310-58-3 potassium hydroxide**

Oral	LD50	273 mg/kg (rat)
------	------	-----------------

**CAS: 7440-48-4 cobalt**

Oral	LD50	6,170 mg/kg (rat)
------	------	-------------------

**CAS: 1310-65-2 lithium hydroxide**

Oral	LD50	363 mg/kg (mouse)
------	------	-------------------

**CAS: 1314-13-2 zinc oxide**

Oral	LD50	> 5,000 mg/kg (rat)
Inhalative	LC50/4h	2,500 mg/m <sup>3</sup> (mouse)

**CAS: 7440-66-6 zinc - massive**

Oral	LD50	> 2,000 mg/kg (rat)
Inhalative	LC50/4h	> 5.41 mg/l (rat)

**Primary irritant effect:**

**Skin corrosion/irritation**

The electrolyte contained in the cell or battery is classified as a caustic liquid and causes skin burns.

**Serious eye damage/irritation**

The electrolyte contained in the cell or battery is classified as a corrosive liquid and causes serious eye damage.

**Respiratory or skin sensitisation**

The electrolyte contained in the cell or battery contains sensitizing substances.

**Other information:** There is no danger from the undamaged battery.

**CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

**Germ cell mutagenicity** Contains nickel dihydroxide.

**Carcinogenicity** The electrolyte contains nickel and cobalt compounds.

**Reproductive toxicity** The electrolyte contains cobalt compounds.

**STOT-single exposure** Based on available data, the classification criteria are not met.

**STOT-repeated exposure** The electrolyte contains nickel compounds.

**Aspiration hazard** Based on available data, the classification criteria are not met.

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## \* SECTION 12: Ecological information

### 12.1 Toxicity

#### Aquatic toxicity:

##### CAS: 1310-58-3 potassium hydroxide

LC50 (96 h) 80 mg/l (fish) (*Gambusia affinis*)

##### CAS: 1310-73-2 sodium hydroxide

EC50 (48 h) 40.4 mg/l (daphnia) (*Ceriodaphnia* sp.)

LC50 (96 h) 35 – 189 mg/l (fish)

EC50 (24 h) 76 mg/l (daphnia) (*Daphnia magna*)

##### CAS: 1310-65-2 lithium hydroxide

EC50 (72 h) 1.88 mg/l (algae)

##### CAS: 1314-13-2 zinc oxide

LC50 (96 h) 0.169 mg/l (fish) (*Onchorhynchus mykiss*)

**12.2 Persistence and degradability** No further relevant information available.

**12.3 Bioaccumulative potential** No further relevant information available.

**12.4 Mobility in soil** No further relevant information available.

#### Additional ecological information:

##### General notes:

Avoid release to the environment.

Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

##### 12.5 Results of PBT and vPvB assessment

**PBT:** Not applicable.

**vPvB:** Not applicable.

**12.6 Other adverse effects** No further relevant information available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Recommendation

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Dispose only through authorized companies in accordance with local regulations.

#### European waste catalogue

Notes: The European Waste Catalogue (EWC) classifies waste materials and categorises them according to what they are and how they were produced. This may cause other classifications. The final decision belongs to the last user.

16 06 05	other batteries and accumulators
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#### Uncleaned packaging:

**Recommendation:** Dispose of packaging according to regulations on the disposal of packagings.

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Trade name: Nickel Metallhydrid Akku /Akku-Pack (NiMH)

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\* SECTION 14: Transport information

14.1 UN-Number

ADR/RID/ADN, IMDG, IATA

UN3496

14.2 UN proper shipping name

ADR/RID/ADN

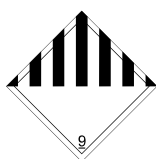
3496 Batteries, nickel-metal hydride

IMDG, IATA

Batteries, nickel-metal hydride

14.3 Transport hazard class(es)

IMDG, IATA



Class

9 Miscellaneous dangerous substances and articles.

Label

9

14.4 Packing group

ADR/RID/ADN, IMDG, IATA

not regulated

14.5 Environmental hazards:

Product contains environmentally hazardous substances:  
nickel dihydroxide

14.6 Special precautions for user

Not applicable.

Hazard identification number (Kemler code):

-

EMS Number:

F-A,S-I

Stowage Category

A

Stowage Code

SW1 Protected from sources of heat.

14.7 Transport in bulk according to Annex II of  
Marpol and the IBC Code

Not applicable.

Transport/Additional information:

**Not subject to the provisions of ADR/RID/ADN.**

**IATA:**

Lighting components, not restricted as per special  
provision A199.

ADR/RID/ADN

Transport category

-

Tunnel restriction code

-

IMDG

Limited quantities (LQ)

0

Excepted quantities (EQ)

Code: E0

Not permitted as Excepted Quantity

UN "Model Regulation":

UN 3496 BATTERIES, NICKEL-METAL HYDRIDE, 9

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**Trade name: Nickel Metallhydrid Akku /Akku-Pack (NiMH)**

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## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture Labelling according to Regulation (EC) No 1272/2008

According to REACH, the product is an article and therefore not subject to classification and labelling according to CLP Regulation (EC) No. 1272/2008.

There is no obligation to prepare safety data sheets for articles. This data sheet describes the safety requirements and is based on the safety data sheet according to REACH Regulation (EC) No. 1907/2006.

#### Directive 2012/18/EU

**Named dangerous substances - ANNEX I** None of the ingredients is listed.

**REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 27

#### **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**

None of the ingredients is listed.

**15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

### Relevant phrases

- H290 May be corrosive to metals.
- H301 Toxic if swallowed.
- H302 Harmful if swallowed.
- H314 Causes severe skin burns and eye damage.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H330 Fatal if inhaled.
- H332 Harmful if inhaled.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H335 May cause respiratory irritation.
- H341 Suspected of causing genetic defects.
- H350 May cause cancer.
- H350i May cause cancer by inhalation.
- H351 Suspected of causing cancer.
- H360 May damage fertility or the unborn child.
- H360D May damage the unborn child.
- H361 Suspected of damaging fertility or the unborn child.
- H372 Causes damage to organs through prolonged or repeated exposure.
- H400 Very toxic to aquatic life.
- H410 Very toxic to aquatic life with long lasting effects.
- H411 Toxic to aquatic life with long lasting effects.
- H413 May cause long lasting harmful effects to aquatic life.

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**Trade name: Nickel Metallhydrid Akku /Akku-Pack (NiMH)**

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**Training hints**

Regular training of staff involved in the transport of dangerous goods (in accordance with Chapter 1.3 ADR).

**Department issuing SDS:**

UmEnA GmbH  
<http://umena.at>

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
ELINCS: European List of Notified Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
DNEL: Derived No-Effect Level (REACH)  
PNEC: Predicted No-Effect Concentration (REACH)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
Met. Corr. 1: Corrosive to metals – Category 1  
Acute Tox. 3: Acute toxicity - oral – Category 3  
Acute Tox. 1: Acute toxicity - inhalation – Category 1  
Acute Tox. 2: Acute toxicity - inhalation – Category 2  
Acute Tox. 4: Acute toxicity - inhalation – Category 4  
Skin Corr. 1A: Skin corrosion/irritation – Category 1A  
Skin Corr. 1B: Skin corrosion/irritation – Category 1B  
Skin Irrit. 2: Skin corrosion/irritation – Category 2  
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2  
Resp. Sens. 1: Respiratory sensitisation – Category 1  
Resp. Sens. 1B: Respiratory sensitisation – Category 1B  
Skin Sens. 1: Skin sensitisation – Category 1  
Muta. 2: Germ cell mutagenicity – Category 2  
Carc. 1A: Carcinogenicity – Category 1A  
Carc. 1B: Carcinogenicity – Category 1B  
Carc. 2: Carcinogenicity – Category 2  
Repr. 1B: Reproductive toxicity – Category 1B  
Repr. 1B: Reproductive toxicity – Category 1B  
Repr. 2: Reproductive toxicity – Category 2  
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3  
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1  
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1  
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1  
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2  
Aquatic Chronic 4: Hazardous to the aquatic environment - long-term aquatic hazard – Category 4

**\* Data compared to the previous version altered.**