

## BATTERY INFORMATION SHEET for Tridonic NiMH Batteries with a capacity of 2.2 Ah & 4.0 Ah

### 1. IDENTIFICATION

#### 1.1 Product

Product Identity (used on the label): Nickel Metal Hydride Battery

#### 1.2 Supplier

Headquarters: Tridonic GmbH & Co KG  
Address: Färbergasse 15, 6851 Dornbirn  
Phone/Fax: +43 5572 395-0 / +43 5572 20176

#### 1.3 Emergency contact

In case of emergency please contact a Tridonic sales office in your region:

### EUROPE:

#### Austria

Tridonic GmbH & Co KG  
Head Office  
Färbergasse 15  
6851 Dornbirn  
Austria  
Tel: +43 5572 395-0  
Fax: +43 5572 20176  
sales@tridonic.com  
www.tridonic.com

#### France

Tridonic France  
8 Rue de Bruxelles  
ZI Krafft  
67150 Erstein  
France  
Tel: +33 3 88 59 62 70  
Fax: +33 3 88 59 62 75  
info.france@tridonic.com  
www.tridonic.fr

#### Germany

Tridonic Deutschland GmbH  
Edisonallee 1  
89231 Neu-Ulm  
Germany  
Tel: +49 731 176629-0  
Fax: +49 731 176629-15  
vertrieb.deutschland@tridonic.com  
www.tridonic.de

#### ITALY

Tridonic Italia srl  
Viale della Navigazione  
Interna, 115  
35027 Noventa Padovana  
Italy  
Tel: +39 049 89 45 127  
Fax: +39 049 87 04 715  
vendite.italia@tridonic.com  
servizio.tecnico@tridonic.com  
www.tridonic.it

#### SPAIN

Tridonic Iberia, S.L.  
OFICINA CENTRAL – MADRID  
Calle Carpinteros nº 8, 2a  
Poligono Industrial Pinares Llanos  
28670 Villaviciosa de Odón  
(Madrid)  
Spain  
Tel: +34 916 162 095  
Fax: +34 916 165 695  
ventas@tridonic.com  
www.tridonic.es

#### TURKEY

Tridonic Aydınlatma Tic.Ltd. Şti.  
Kemankeş Mah., Necatibey cad.  
Akçe Sok., Akçe Han No: 10  
34420 Karaköy/Beyoğlu  
İSTANBUL  
Turkey  
Tel: +90 212 244 78 05  
Fax: +90 212 244 78 06  
satis@tridonic.com  
www.tridonic.com

## UNITED KINGDOM

Tridonic UK Ltd  
Unit 7 Lindenwood  
Chineham Business Park  
Crockford Lane, Chineham  
RG24 8LB Basingstoke  
United Kingdom  
Tel: +44 1256 374300  
Fax: +44 1256 374200  
enquiries.uk@tridonic.com  
www.tridonic.com

## SINGAPORE

Tridonic S.E.A. Pte Ltd  
10 Tannery Lane  
#03-01  
347773 Singapore  
Singapore  
Tel: +65 62928148  
Fax: +65 62933700  
asean@tridonic.com  
www.tridonic.com

## NEW ZEALAND

Tridonic New Zealand Ltd  
Airport Oaks Mangere  
PO Box 107044  
9 Aintree Ave  
New Zealand  
Tel: +64 9256 2310  
Fax: +64 9256 0109  
sales@tridonic.co.nz  
www.tridonic.com

## ASIA:

### CHINA

Tridonic (Shanghai) Co., Ltd.  
(Headquarters)  
Room 602, Buliding B, Zhongs-  
han International Plaza  
No.789 Tianshanxi Road  
200335 Shanghai  
China  
Tel: +86 21 52400599  
Fax: +86 21 52400230  
china@tridonic.com  
www.tridonic.com

## UNITED ARAB EMIRATES

Tridonic Middle East (FZE)  
P.O. Box 17972  
Jebel Ali Free Zone  
Dubai  
United Arab Emirates  
Tel: +971 4 8833664  
Fax: +971 4 8833665  
sales.middleeast@tridonic.com  
www.tridonic.ae

## AFRICA:

### SOUTH AFRICA

Tridonic SA (Pty) Ltd  
Unit 7, Ground Floor, Old Trafford Office Park  
C/O Trichardt and Leiths Road  
Bartlett, Boksburg 1459  
South Africa  
Tel: +27 11 894 3525  
Fax: +27 86 459 6035  
www.tridonic.com

## INDIA

Atco Controls (India) Pvt. Ltd.  
38B Nariman Bhavan,  
Nariman Point  
400 021 Mumbai  
India  
Tel: +91 22 2202 5528  
Fax: +91 22 2202 2304  
sales@atcocontrols.com  
www.tridonic.co.in

## PACIFIC:

### AUSTRALIA

Tridonic Australia Pty Ltd  
43-47 Newton Road  
Wetherill Park, NSW, 2164  
Australia  
Tel: +61 2 8788 5400  
Fax: +61 2 8788 5488  
infoau@tridonic.com  
www.tridonic.com

## 2. HAZARD IDENTIFICATION

### GHS Classification: N.A.

Under normal conditions of use, the battery is hermetically sealed. If the electrolyte is leaked, hazardous material may be released.

### Human Health Effects:

- Inhalation: The electrolyte inhalation can cause respiratory irritation. It could be possibly carcinogen.
- Skin contact: The electrolyte can cause skin irritation, chemical burns. Nickel compounds, cobalt and cobalt compounds can cause skin sensitization and an allergic contact dermatitis.
- Eye contact: The electrolyte leaked from the battery cell is strong alkali, can cause severe irritation and chemical burns.
- Ingestion: If the battery is swallowed and opened, or the electrolyte is ingested, the electrolyte irritates the mouth and the throat seriously, may lead to vomiting, nausea, hematemesis, stomach pains and diarrhea.

### Environmental Effects:

The battery cell remains in the environment. Do not throw it out into the environment.

### Specific Hazards:

As previously described.

## 3. COMPOSITION, INFORMATION ON INGREDIENTS

Chemical Name/Common Name	CAS No.	%/wt
Aluminum	7429-90-5	< 2
Cobalt metal	7440-48-4	2.5-6.0
Cobalt oxide	1307-96-6	
Cobalt hydroxide	21041-93-0	
Lithium Hydroxide	1310-65-2	0-4
Manganese	7439-96-5	0-4
Lanthanum	7439-91-0	<13
Cerium	7440-45-1	
Neodymium	7440-00-8	
Praseodymium	7440-10-0	35-55
Nickel hydroxide	12054-48-7	
Nickel oxide	1313-99-1	
Nickel powder	7440-02-0	<7
Potassium Hydroxide	1310-58-3	
Sodium Hydroxide	1310-73-2	
Zinc metal	7440-66-6	<3
Zinc oxide	1314-13-2	
Zinc hydroxide	20427-58-1	
Iron	7439-89-6	10-25
Other Non-hazardous	Water, Paper, Plastic and Other	Balance

#### 4. FIRST AID MEASURES

**Inhalation:**

If electrolyte leakage occurs, cover the victim in a blanket, move to the place of fresh air and keep quiet. Seek medical attention immediately. When dyspnea (breathing difficulty) or asphyxia (breath-hold), give artificial respiration immediately.

**Skin Contact:**

If electrolyte leakage occurs, remove contaminated clothes and shoes immediately. Wash the adherence or contact region with soap and plenty of water. Seek medical attention immediately.

**Eye Contact:**

If electrolyte leakage occurs, immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention immediately.

**Ingestion:**

If battery cell and electrolyte is ingested, do not induce vomiting or give food or drink. Seek medical attention immediately.

#### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Dry sand, chemical powder fire extinguishing medium.

**Unusual Fire and Explosion Hazards:** Acrid or harmful fume is emitted during fire.

**Special Protective equipment and Precautions for fire-fighters:** Fire fighters should wear self-contained breathing apparatus. Burning nickel metal hydride batteries can produce toxic fumes including oxides of nickel, cobalt, aluminum, manganese, lanthanum, cerium, neodymium, and praseodymium. Protective equipment written in Section VIII.

#### 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:**

Forbid unauthorized person to enter. Remove leaked materials with protective equipment written in Section VIII.

**Environmental precautions:** Do not throw out into the environment.

**Containment and Clean Up:**

Dilute the leaked electrolyte with water and neutralize with diluted sulfuric acid. The leaked solid is moved to a container. The leaked place is fully flushed with water.

#### 7. HANDLING USAGE AND STORAGE PRECAUTIONS

**Handling:**

Prevention of user exposure: Not necessary under normal use. Prevention of fire and explosion: Not necessary under normal use. Precaution for safe handling: Do not damage or remove the external tube.

Specific safe handling advice: Never throw out cells in a fire or expose to high temperatures. Do not soak cells in water and seawater. Do not expose to strong oxidizers. Do not give a strong mechanical shock or throw down. Never disassemble, modify or deform. Do not connect the positive terminal to the negative terminal with electrically conductive material. In the case of charging, use only dedicated charger or charge according to the conditions specified by Tridonic batteries.

**Storage:**

Storage conditions (suitable to be avoided): Avoid direct sunlight, high temperature, high humidity.

The cells and batteries shall not be stored in high temperature, the maximum temperature allowed is 60 °C for a short period during the shipment. Otherwise the cells may be leakage and can result in shortened cycle life.

Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids

Packing material (recommended, not suitable): insulated and tear-proof materials are recommended.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Engineering Control:**

No engineering measure is necessary during normal use. If internal cell materials are leaked, the information below will be useful.

**Exposure Control Limit:**

<b>Common Chemical Name / General Name</b>	<b>OSHA PEL</b>	<b>ACGIH TLV</b>
Aluminum metal (as Al)	TWA 15 mg/m <sup>3</sup> (total) TWA 5 mg/m <sup>3</sup> (resp)	-
Cobalt metal (As Co)	TWA 0.1 mg/m <sup>3</sup>	TWA 0.02 mg/m <sup>3</sup>
Lithium Hydroxide	-	-
Manganese compounds (as Mn)	(Ceiling) 5 mg/m <sup>3</sup>	TWA 0.02 mg/m <sup>3</sup> (resp.)
Nickel, metal and insoluble compounds	(as Ni) TWA 1 mg/m <sup>3</sup>	Elemental: 1.5mg/m <sup>3</sup> (IHL); Insoluble inorganic compounds: 0.2mg/m <sup>3</sup> (IHL)
Potassium Hydroxide	-	-
Sodium Hydroxide	2 mg/m <sup>3</sup> TWA	(Ceiling) 2 mg/m <sup>3</sup>
Zinc oxide	Respirable fraction: 5 mg/m <sup>3</sup>	Respirable fraction: 2 mg/m <sup>3</sup>

TWA: Time Weighted Average

ACGIH TLV: American Conference of Governmental Industrial Hygienists Threshold Limit Value

OSHA PEL: Occupational Safety & Health Administration Permissible Exposure Limit

**Personal protective equipment:**

- Respiratory protection: Protective mask
- Hand protection: Protective gloves
- Eye protection: Protective glasses designed to protect against liquid splashes
- Skin and body protection: Working clothes with long sleeve and long trousers

## 9. Physical and Chemical Properties

**Appearance:** Solid, Cylindrical Shape, Metallic color

**Odor:** Odorless

**Odor Threshold:** N.A.

**pH:** N.A.

**Melting point / freezing point:** N.A.

**Initial boiling point and boiling range:** N.A.

**Flash point:** N.A.

**Evaporation rate:** N.A.

**Flammability (solid, gas):** N.A.

**Upper/lower flammability or explosive limits:** N.A.

**Vapor pressure:** N.A.

**Vapor density:** N.A.

**Relative density:** N.A.

**Solubility:** Insoluble in water

**Partition coefficient n-octanol/water:** N.A.

**Auto-ignition temperature:** N.A.

**Decomposition temperature:** N.A.

**Viscosity:** N.A.

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under normal use

**Possibility of hazardous reactions:** By misuse of a battery cell or the like, oxygen or hydrogen accumulates in the cell and the internal pressure rises. These gases may be emitted through the gas release vent. When fire is near, these gases may take fire. When a battery cell is heated strongly by the surrounding fire, acrid or harmful fume may be emitted.

**Conditions to avoid:** Direct sunlight, high temperature and high humidity

**Materials to avoid:** Conductive materials, water, seawater, strong oxidizers and strong acids

**Hazardous decomposition products:** Acrid or harmful fume is emitted during fire.

## 11. TOXICOLOGICAL INFORMATION

There is no toxicity data for Nickel Metal Hydride Battery. Under normal conditions of use, the battery is non-toxic.

## 12. ECOLOGICAL INFORMATION

**Persistence/degradability:** Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.

## 13. DISPOSAL CONSIDERATIONS

**Recommended methods for safe and environmentally preferred disposal:**

- **Product (waste from residues):** Do not throw out a used battery cell. Recycle it through the recycling company.
- **Contaminated packaging:** Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery cell contaminates them, dispose them as industrial wastes subject to special control.

## 14. TRANSPORT INFORMATION

Regulatory Body	Special Provisions
ADR	295 – 304, 598
IMO	UN 3496 SP117 and SP963
UN	UN 3496
US DOT	49 CFR 172, 102 Provision 130
IATA	A199

Form of Transportation	UN No.	UN Proper Shipping Name	Transport Hazard Class	Packing Group Number	Environmental Hazards	Guidance Transport in bulk	Special Precaution
Sea	3496	BATTERIES, NICKEL-METAL HYDRIDE	9	-	No	According to ANNEX II of MARPOL 73/78 and the IBC Code	SP117 & SP963

a) In general, all batteries in all forms of transportation (ground, air, or ocean) must be packaged in a safe and responsible manner. Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and be contained in “strong outer packaging” that prevents spillage of contents. All original packaging for Tridonic nickel metal hydride batteries has been designed to be compliant with these regulatory concerns.

Tridonic nickel metal hydride batteries (sometimes referred to as “Dry cell” batteries) are not defined as dangerous goods under the IATA Dangerous Goods Regulations 56th edition 2015, ICAO Technical Instructions and the U.S. hazardous materials regulations (49 CFR). These batteries are not subject to the dangerous goods regulations as they are compliant with the requirements contained in the following special provisions.

In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words “not restricted” and the Special Provision number A199 be provided on the air waybill, when an air waybill is issued.

b) International Maritime Organization (IMO) IMDG Code regulated these products as UN 3496 BATTERIES, NICKEL METAL HYDRIDE, class 9 dangerous goods with Special Provision 117 and 963 assigned

### SP117

Only regulated when transported by sea.

### SP963

Nickel-metal hydride button cells or nickel-metal hydride cells or batteries packed with or contained in equipment are not subject to the provisions of this Code.

All other nickel-metal hydride cells or batteries shall be securely packed and protected from short circuit. They are not subject to other provisions of this Code provided that they are loaded in a cargo transport unit in a total quantity of less than 100 Kg gross mass. When loaded in a cargo transport unit in a total quantity of 100 Kg gross mass or more, they are not subject to other provisions of this Code except those of 5.4.1, 5.4.3 and column (16) of the dangerous good list in Chapter 3.2.

**The requirements of these sections are:**

1. Dangerous goods transport documentation to accompany the shipment.
2. The shipment must be described as „UN3496, BATTERIES, NICKEL-METAL HYDRIDE, CLASS 9“ on the shipper's declaration for dangerous goods.
3. The dangerous goods description must also be entered on the Dangerous Cargo Manifest and/or the detailed stowage plan in compliance with the IMDG Code requirements for shipboard documentation.

**15. REGULATORY INFORMATION**

Special requirement be according to the local regulatory

**16. OTHER INFORMATION**

The data in this Material Safety Data Sheet relates only to the specific material designated herein.